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VALENTINE NATIONAL WILDLIFE REFUGE

Valentine, Nebraska

Annual Narrative Report

Calendar Year 2007

INTRODUCTION

Valentine National Wildlife Refuge (NWR) was established on August 4, 1935 under the Migratory Bird Conservation Act by Executive Order 7142. The purpose of the refuge as stated in the executive order is “as a refuge and breeding ground for migratory birds and other wildlife.” Acquisition funding came from Duck Stamp sales and the Emergency Conservation Fund Of 1933.

The 71,772-acre Valentine NWR is located in the Sandhills of north-central Nebraska. The Sandhills contain the largest remaining stands of mid and tall grass native prairie left in North America. The refuge is a unique and ecologically important component of the National Wildlife Refuge System. The refuge has about 49,000 acres of grassy, undulating sand dunes, 13,000 acres of sub-irrigated meadows, and 10,000 acres of shallow lakes and marshes. The refuge is home to 271 species of birds, 59 species of mammals, and 22 species of reptiles and amphibians. The refuge is important to nesting and migrating waterfowl and is also one of the few places where good numbers of sharp-tailed grouse and prairie chickens can be found in the same area. Several threatened or endangered birds stop at the refuge during migration. Two listed plants and one listed insect are also found here. Most of the native flora and fauna found here historically are still present today.

The refuge is part of a complex administered from Fort Niobrara NWR. Valentine NWR is in Cherry County with a subheadquarters located on Hackberry Lake, 17 miles south of the town of Valentine on US 83 then 13 miles west on State Spur 16B. Valentine National Wildlife Refuge staff also manages the Yellowthroat Wildlife Management Area in Brown County (see J.3) and four easements (see F.13).

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A. HIGHLIGHTS

We received a \$300,000 earmark in the Transportation bill to improve refuge roads. Section E-5

Refuge staff, with help from other refuge and cooperating fire crews, completed 4 prescribed fires totaling 1,492 acres, a record for us. Section F-9

Pony Lake was renovated by removing carp with rotenone. The removal is part of a study being conducted by South Dakota State University on the effects of fish on water quality and invertebrates. Section G-11

Grand Island students, using funds from a Nature of Learning Grant, grew endangered blowout penstemon plants in the greenhouse and then planted them on the refuge. Section H-2

An individual who stole over \$6,000 worth of refuge fencing materials was caught and convicted of the crime. Section H-17

Refuge staff completed major repairs to the Watts and Hackberry Lake dikes. Section I-2.

B. CLIMATIC CONDITIONS

There was no extreme weather events recorded at the Hackberry Headquarters weather station in 2007. Perhaps the most notable events were an unusually high amount of rain in May, and an unusually low amount of rain in July (Table B1). The May total is the second highest rainfall total for the month since 1988, and the July total is the lowest rainfall total recorded over the same period. Two large storm systems came through the area in May, with each storm producing >2 inches of rain. A storm on 4-5 May produced heavy rain and pea-sized hail along with 2.13 inches of rain. This rain fell hard and caused some erosion in the hills. A storm on 29-30 May produced 2.28 inches of rain, which fell at a moderate rate for about 14 hours. Overall precipitation for 2007 ended slightly above the yearly average, making 2007 only the 3rd year in the last decade with above average precipitation. Growing season moisture was greatly affected by the lack of precipitation in July, which limited regrowth and slowed warm-season plant growth. Overall, precipitation during the growing season was lower than normal, with precipitation received after the growing season allowing for an average amount of precipitation for the year.

Ice conditions on Refuge lakes were good for ice fishing from January through the first part of March. Ice fishermen enjoyed 15-18 inches of good ice through

February, and then warm weather in early March caused ice conditions to deteriorate rapidly. Ice was completely gone by 11 March. Ice returned to lakes on 22 Nov, and lasted through the end of the year. The first fall frost occurred on 14 Sept, with an overnight low of 33°F. Snow fell during 4 months (Jan, Feb, Apr, Dec); no snow fell in Mar, and the average maximum temperature for Mar was higher than in April. A cold first week in April resulted in some frost damage to plants that had begun to leaf out.

Table B1. Monthly weather data summary from the weather station at Hackberry Headquarters, Valentine NWR, during 2007.

Month	Precip. (inches)	Snow (inches)	Temperature (° F)				Record Temperature (° F)			
			Min	Ave	Max	Ave	Min	Year	Max	Year
Jan	0.28	3.8	-5	15.0	54	34.2	-38	1894	70	1974
Feb	0.60	7.8	-17	12.8	55	32.2	-37	1899	76	1982
Mar	1.15	0	14	34.2	78	61.3	-28	1948	87	1946
Apr	2.14	1	9	34.7	86	58.5	-8	1936	97	1992
May	6.88	0	41	50.1	89	74.1	17	1909	102	1934
Jun	2.87	0	39	58.1	91	81.7	30	1973 ^a	107	1937
Jul	0.24	0	50	64.2	101	91.3	38	1971	111	1990
Aug	3.25	0	50	63.3	102	87.5	34	1935	108	1947 ^a
Sept	1.08	0	33	51.1	93	78.6	12	1926	103	1952
Oct	2.84	0	29	41.4	91	68.0	-6	1925	96	1922
Nov	0.02	0	5	28.5	71	54.8	-36	1887	82	2005 ^a
Dec	0.83	7.75	7	17.7	35	35.3	-34	1907	76	1936
Total	22.18	20.35	Average precipitation (1945-2006)							21.46

^a Indicates the most recent year record was observed.

D. PLANNING

1. **Master Plan**
2. **Management Plan**

The fy 2007 accomplishments and fy 2008 plans for Valentine NWR were entered into the Refuge Annual Performance Plan. We were able to meet most of our goals through the dedication and extra effort of our small but energetic staff. We did not add much to what we have been doing in past years as we have 5 construction projects funded for FY 2008.

Information was entered into SAMMS for the Refuge Road Update. We have no roads in the five year plan at Valentine NWR. We have a possibility of receiving funding through several Congressional earmarks. We have done limited maintenance on our roads and it shows.

The annual RPI update for Valentine NWR was completed. We had no new assets to add and corrected a few mistakes in the database.

4. Compliance with Environmental and Cultural Resource Mandates

Thomas McManus of Environmental Health Services tested Quarters 1, 2, 10, 13 and 20 for lead paint and lead in drinking water. These tests were done in 2006 and we received the results in 2007. Residents of the quarters were notified of the results. USFWS employees must receive training to do or supervise contract abatement. **A large commitment in time and money will be required to remedy these problems.**

Hackberry Quarters 1 tested positive for lead in the white door frame and door in the porch, the brown soffit, brown attic vent, and the green/brown door and door frame. It passed the water and swipe tests. All were listed as “hazards” and require interim abatement or control. Inspections must be done annually by refuge staff.

Hackberry Bunkhouse Quarters 2 tested positive for lead in the white painted brick in the laundry room, the front entry door, and the brown window and soffit paint. None were listed as “hazards” and no interim abatement or control is required. Inspections must be done annually by refuge staff and every three years by a contractor. This quarters passed the swipe and water tests.

The Trapper’s Shack Quarters 10 tested positive for lead on the front screen and entry door, door casing, window trim, fascia, soffit, and siding. No lead was found on interior surfaces. The exterior surfaces were classified as a “hazard” and require abatement or interim controls consisting of paint stabilization or replacement and re-siding. Inspections must be done annually by refuge staff and every 3 years by a contractor. This building passed the water and surface swipe tests.

Pelican Lake Quarters 13 tested positive for lead in the white paint found on the siding, porch trim, porch rail, window trim, foundation, window frames, and porch posts. Most of the white paint on the interior of the house also contained lead. The house passed the swipe test for lead in dust. Lead was found in the first water test taken. Subsequent test found no lead in the water. Residents were provided bottled water while the second test was conducted. Lead abatement for this house probably exceeds the value of the house.

Pony Lake Quarters 20 tested positive for lead in the brown wood window trim on the basement, brown wood fascia, and mahogany wood paneling in bedroom 1. The exterior brown basement wood window trim is a “hazard” and requires interim control and abatement consisting of paint stabilization or replacement. The same was recommended for the fascia. No action is required on the paneling which may be contaminated due to the underlying material. In addition to this an

inspection must be done each year by refuge staff and every 3 years by a contractor. This building passed the water test, surface swipe test, and a soil test.

Regional Archeologist Meg Van Ness visited on May 14 and reviewed projects including repair of the Duck Hospital, Quarters 1 conversion of garage back into a breezeway, repairs to the East End Access Road, and construction of the viewing station along Highway 83. She did not think any of the projects would negatively affect historical resources.

Historical review forms for the Pony and W. Long dikes and water control structures, the Hackberry Office restroom/accessibility rehab, the visitor contact station along Highway 83, and the roof replacement of the Hackberry Machine Shed were completed and sent to the regional archeologist.

Jim Behrmann conducted an environmental compliance check on Valentine NWR on June 18. We spent quite a bit of time preparing for the inspection and were rewarded with no items written up. Jim had several suggestions for things we could do and we are taking care of those items.

5. Research and Investigation

b. Ongoing research at Valentine NWR

Data collection for the study “Effects of grazing regimes on distribution and abundance of grassland birds at Valentine National Wildlife Refuge” was completed in 2006. However, error checking and data formatting were not completed in 2006, so Nenneman spent some time during 2007 getting all three years of bird observation data formatted to be sent on to the statisticians at Northern Prairie Wildlife Research Center who will be assisting with analysis of the data. An additional time set-back for the study occurred in June, when Pam Pietz suffered a stroke. Pam has recovered well from the stroke and heart surgery, but our project deadlines are now to have a report prepared for FWS use by the end of 2008, and a manuscript for publication by the end of 2009. Objectives of this study are to provide estimates of non-game grassland bird densities and distribution in both upland and subirrigated meadows, to compare bird densities and species richness between recently grazed and rested habitat units in both upland and meadow habitat types, and to determine vegetation characteristics associated with each habitat type and within each grazing treatment among those habitat types. Additionally, this study will provide a comparison of species occurrence and richness for non-game grassland birds using refuge grasslands to those using private pastures studied by UN-L graduate student Silka Finkbeiner. This information could provide insights for refuge management based on bird distributions across a wide range of grassland management practices.

Dr. Gibson (University of Nebraska-Lincoln) was on Valentine Refuge for a about three weeks in April to continue his investigation into lek site selection by Sharp-tailed Grouse and Greater Prairie Chickens. His field work this year was a continuation of work he started in 2006, which is a test of how well prairie grouse match their chosen lek sites. Dr. Gibson captured prairie grouse on lek sites and measured the amount of reflected light from different areas of the bird (contour feathers, undertail coverts, neck skin, combs) and comparing those values to the reflectance values at lek sites for the species. The purpose of this research is to assess if the species select separate lek sites based on matching their contour feather reflectance to the lek site (e.g. they are hard to see) and if the display surfaces then provided a visual cue significantly different from the lek site. Dr. Gibson also wanted to assess how typical lek sites (low dune tops for Sharp-tails, wetland edges for Prairie Chickens) compare to lek sites where the two species sometimes display together (typically mowed meadows). Dr. Gibson was able to provide assistance by collecting lek count data at a few leks in the study block.

E. ADMINISTRATION

1. Personnel

Valentine National Wildlife Refuge is part of the Fort Niobrara/Valentine National Wildlife Refuge Complex with three permanent staff assigned to the station. There were also 2 seasonal firefighters stationed at the refuge this year.

Mark Lindvall	Refuge Manager	GS-12
Mel Nenneman	Wildlife Biologist	GS-11
Dave Kime	Maintenance Worker	WG-8
Cara Zastrow	Range Aid/Fire fighter	GS-3(May 14–Aug 24)
Mark Morton	Range Aid/Fire fighter	GS-3 (May 14-Aug 24)
Kim Chadwick	Park Ranger SCEP	GS-4 (May 14–Aug 17)

Kim Chadwick was in the Student Career Experience Program. Her interest is to complete the SCEP program and become a refuge law enforcement officer. She is a criminal justice major at Chadron State College. This was her first work period as a SCEP. She went on details to refuges in Oklahoma, Texas, and Alaska as part of her training. She also worked several days with the special agent out of North Platte. Kim also was a big help while she was here and worked on research, public use, and maintenance projects.

Firefighter Range Techs Mark Morton and Cara Zastrow were on several fire details to the south and west and thus spent little time on Valentine NWR.

4. **Volunteers**

Buffalo Bruce and 3 volunteers from the Sierra Club cleared invasive cedar trees from the aspen grove located in Habitat Unit 1A3 (Fig E1). They stacked the trees for burning this winter. There are 2 small remnant aspen stands on Valentine NWR. Supposedly they are left over from the last glacial period. The other stand in Habitat Unit 2B3D was cleared of cedars by refuge staff in May.



Figure E1. Volunteers removed cedar trees from remnant aspen stand in Habitat Unit 1A3 (KC).

A group of sixth and seventh graders from Walnut Middle School in Grand Island, NE visited Valentine NWR in May to assist with planting blowout penstemon seedlings. More information on their visit is in section H2.

5. **Funding**

Valentine National Wildlife Refuge receives funding as part of the Fort Niobrara/Valentine National Wildlife Refuge Complex. In 2007, the following dedicated funds were received.

We received \$2,000 of private lands funding for FY 2007. Our work here is mostly in evaluating and monitoring Wetland Reserve Program properties.

Left over quarters funds (FY07) in the amount of \$7,000 were applied for to replace the furnace and add air conditioning to Quarters 2, \$3,500 was received. The difference will be made up with our quarters funds. The work was done in 2007.

The visitor services project that was cancelled due to the funds going to Hurricane Katrina work has been again funded in the amount of \$274,032 for FY 07. The project will be done in calendar year 2008.

At the request of the Regional Office, the Refuge Operating Needs Project for a research study on yellow mud turtles was updated for possible FY09 funding. The \$87,000 study to be done on Valentine NWR would determine the population on the refuge and provide recommendations for preventing refuge developments, specifically roads, from impacting this species of concern. We have received no word on funding of this request.

A request for Public Lands Highway Discretionary Program funds was submitted to the Nebraska Department of Roads. The request was for \$1,630,000 for upgrades and repairs to Pelican Lake, Calf Camp, Little Hay, West Long, and Watts Lake roads.

John Berge from Senator Nelson's office visited Valentine NWR on June 11 to look at Private Lands Highway Discretionary road projects covered in the request. He was impressed with the poor shape of what we call a road and gave the impression that Senator Nelson would sponsor this work.

At the request of Nebraska Department of Roads, the funding request was amended to state that we would accept partial funding of the project. We originally requested \$1.6 million and amended the request to state that we would take \$400,000 to accomplish a portion of the road improvements. The Transportation Bill passed and we will receive about \$300,000 which will be used for rebuilding a portion of the Pelican Lake Road. Hopefully the work can be done in 2008.

Two grant support letters were provided to Walnut Grove Middle School in Grand Island for Nature of Learning Grants for two projects. The Penstemon Protector project to grow and plant the endangered blowout penstemon at Valentine NWR

was funded. They were also hoping for grant moneys to restore the Duck Hospital, a historic building at Valentine NWR. This project was not funded.

A proposal was prepared and funded in the amount of \$49,000 for HPAI surveillance at Valentine NWR. The funding will pay for a new airboat, fuel, salaries, and other expenses related to the surveillance.

The Complex received \$18,000 from the RO in year end monies. At Valentine NWR the funds were used to pay for fisheries surveys, boundary signs, biological monitoring equipment and supplies, and roofing of 2 small buildings.

Valentine NWR received funding for 4 deferred maintenance projects for fy 2008. They are roofing of the Hackberry Machine Shed (\$27,000), Pony Lake Water Control Structure (\$58,000), Accessibility for the Hackberry Office (\$88,000), and the West Long Lake Water Control Structure (\$13,000). They should all be completed in calendar year 2008.

Funding proposals for rental equipment, quarters funds, EVS funds, and GIS funding were submitted to the RO. Projects include invasive cedar tree cutting, repair to quarters sewage system, an auto tour route brochure, and funding of a technician for getting the Complex refuges going is GIS. The Complex received \$10,000 in fy08 equipment rental funds for cedar tree clearing, \$2,760 in EVS funds for an auto tour route brochure, and \$1,900 for sewage system repairs. We received no funding for implementing RLGIS. We see a great need for this but without outside help we will never get up to speed.

Valentine NWR received \$15,000 in fy08 small equipment funds to purchase a fifth wheel trailer. The trailer will be purchased in 2008.

A new GIS computer was purchased for Valentine NWR with funds obtained through the HAPET office in Grand Island. The decision to replace the old GIS computer was made after the hard drive crashed and had to be re-imaged before the machine would function. The motherboard on the computer had also been replaced 3 times.

6. Safety

Monthly safety meetings were held for the Complex. Refuge Manager Lindvall hosted the January safety meeting on the subject of safe tire inflation using remote inflators. Refuge Manager Lindvall presented information on the dangers of confined spaces along with safety precautions to use around them at the November meeting. We have both permitted and non-permitted confined spaces at both refuges. SCEP student Kim Chadwick provided Spill Containment and Cleanup training to refuge staff at the meeting held on June 11. She went through our plan and showed us how to use the spill kits found at both refuges. Biologist

Mel Nenneman went through the Fort Niobrara/Valentine NWR Complex Disease Contingency Plan at February 12 meeting.

Terry Black conducted a safety review on Valentine NWR on June 18. We spent quite a bit of time and \$2,500 getting ready for the inspection including cleaning all buildings, disposing of junk, purchase and placement of safety gear and signs, and correcting deficiencies noted from lists provided by Terry. All in all we got a good report stating “The refuge is a well managed facility where employee safety is an integral part of their operations.” Terry wrote up 5 items that need attention. There items are no smoke alarms in bunkhouse bedrooms (we have alarms but not in bedrooms), 2 damaged electrical cords, lack of anti-restart devices on 2 saws, no confined space plan for sewer lift stations, and no belt guards on 2 pump jacks. We are fixing these plus some other items we noted or Terry suggested we look into.

7. Technical Assistance

Zone Supervisor Rod Krey visited on January 9 to become familiar with the refuge.

Refuge Manager Lindvall provided information to private landowner Steve Hansen on management of cattails and bulrush in wetlands. A recommendation was made to intensively graze the wetlands prior to flooding in order to reduce the dense stands of cattail. Prescribed burning was also discussed but would be difficult to do in this case.

8. Other

The following training courses were completed during March, “Mandatory Training Month.”

No Fear – Kime, Nenneman, Lindvall
IT Security – Kime, Nenneman, Lindvall
Charge Card – Kime, Nenneman, Lindvall
Motor Boat Operator Refresher – Kime, Lindvall
Misuse of Position Ethics Training – Lindvall
EEO Diversity Training 4 hours – Lindvall

Nenneman and Lindvall attended an 8 hour fire refresher on April 4. Fire safely including review of manuals and fire fighting orders requested by the RO were covered. Also included in this refresher was information from after-action

reviews on recent fire mishaps within the Fish and Wildlife Service. These refreshers remind us to always be vigilant when conducting prescribed fires and when working on wildfire suppression.

SCEP student Kim Chadwick completed credit card, no fear, fire refresher, and it security training.

Refuge Manager Lindvall attended EEO Training in Valentine on September 20. The training was much better than the on-line version and satisfies the training requirement for 2008.

Refuge Manager Lindvall attended a training on weed control hosted by Cherry County Extension of September 20.

Refuge Manager Lindvall completed credit card training for supervisors via the internet.

Refuge Manager Lindvall attended the Project Leaders Meeting held in Scottsbluff on March 21 and 22.

Refuge Manager Lindvall met with Congressman Adrian Smith and his aide Barb Coksley on August 17. They were provided a short briefing paper on new projects we were working on and issues that involved the refuges in the Complex. Their main interest was in the elk management plan, the new overlook at Ft. Niobrara, and the status of Seier NWR.

Training for using ArcGIS and RLGIS were taught at the Federal Building in Grand Island, NE on Aug 7-9 and Aug 21-23, respectively. The ArcGIS training was taught by Andy Bishop and Sean Fields, and the RLGIS training by Andy Bishop. These classes should help personnel (Nenneman, K. McPeak, Cumbow) begin to better implement GIS tools into refuge planning and management. Both trainings allowed students time to work through exercises using the different tools and features of the programs, which made the training more interesting and hopefully will help with retention of information as we begin using these tools.

Refuge Manager Lindvall and Biologist Nenneman attended the Nebraska Chapter of the Wildlife Society's annual meeting held in Grand Island on October 11 and 12. The focus of the meeting was invasive species. A field trip on day two offered a look at some range management techniques to control cedars and use of goats to manage leafy spurge.

In late February, Mel Nenneman and Kathy McPeak attended a symposium titled "Bird Monitoring and Detectability: Understanding and applying appropriate methods", held at Colorado State University in Ft. Collins, CO. The symposium provided background information regarding the application of advanced field and

analytical techniques applicable to bird monitoring. Nenneman attended the computer applications workshop associated with the symposium. Presenters emphasized the need to move monitoring efforts toward answering hypothesis based testing rather than relying on trend and index based monitoring. A heavy emphasis was placed on methods that account for birds present but not detected (primarily Distance sampling and double-observer methods).

Nenneman attended the on-line Habitat Management Planning course offered through NCTC. The course utilized an interactive on-line web site and a phone connection to provide training for developing Habitat Management Plans (a step-down plan from the CCP). The course was pretty good, although discussion was somewhat limited. Emphasized throughout the training was the use of SMART (Specific, Measurable, Achievable, Results-oriented, Time-fixed) criteria for developing habitat management objectives. Examples of Habitat Management Plans were provided in the course handbook, and should be useful for writing the refuge HMP.

F. HABITAT MANAGEMENT

1. General

The 71,772 acre Valentine NWR lies at the heart of the Nebraska Sandhills. These grass-stabilized sand dunes provide some of the best native mixed- and tallgrass prairie remaining in the U. S. The refuge contains rolling, vegetated sand dunes and interdunal valleys that characterize the Sandhills region. Shallow lakes and wetlands are interspersed throughout the valleys, grading into subirrigated meadows. Sandhills and choppy sandhills range cover about 59,000 acres. Native grasses provide the dominant vegetation cover, although some areas have been invaded by Kentucky bluegrass and smooth brome. Other exotic plants of concern include small areas of leafy spurge, Canada thistle, Garrison creeping foxtail and spotted knapweed. Low water in larger lakes and wetlands during the past few years has allowed Canada thistle and cottonwood trees to proliferate in the wetland margins. Grassland management is accomplished using permittee grazing and haying, prescribed fire, rest, and weed control.

A draft report, *2006 Vegetation Survey of Valentine National Wildlife Refuge*, was received from Botanist Bob Steinhauer. Funds for the survey came from the Sandhills Prairie Refuge Association (\$2,500) and Nebraska Game and Parks Legacy Survey (\$8,800). The report includes plant community descriptions, management recommendations, and a plant collection and survey of 504 species found.

2. Wetlands

There are 37 major wetland/lake areas on Valentine NWR that comprise about 13,000 acres. Lake elevations have been recorded at seven refuge lakes off and on since 1988. Spring elevations this year averaged 1.47 feet below average, and the fall average was 1.41 feet below average (Table F2a). The greatest deviations from average were seen in Clear and Hackberry lakes, which were over two feet below average both spring and fall. Precipitation since 2004 has not been enough to replenish Hackberry Lake after it was renovated; low water in Clear Lake is harder to explain, although Clear Lake does not have as many springs flowing in as most other lakes. Dewey Lake showed the least amount of difference from average, down only 0.52 feet from average in spring. Recent measurements of Willow Lake elevation will be lower than 1988-1997 average because the water control structure washed out in 1997. Average elevations for Willow Lake shown below are just from data recorded since 1997, when the water control structure on the lake washed out. Lower than average lake levels have coincided with the dry weather experienced over seven of the last ten years. These low water conditions have made monitoring lake elevations more difficult, and in many cases the water does not come up to the gauge on the water control structure.

Table F2a. Lake elevations recorded on Valentine NWR, 2007. For all lakes, average spring elevations are based on the highest elevation recorded in Mar-May from 1988-2007, and the average fall elevations are based on the lowest elevation recorded in Aug-Oct from 1988-2007.

Lake	Spring 2007	Fall 2007	Spring Average	Fall Average
Clear	2913.94	2913.41	2916.93	2915.96
Dewey	2923.84	2922.84	2924.36	2923.26
Hackberry	2922.19	2921.26	2924.454	2923.815
Pelican	2941.69	2940.92	2942.63	2941.90
Watts	2922.22	2921.4	2923.72	2922.80
Whitewater	2926.66	2926.06	2928.20	2927.50
Willow*	2909.71	2908.32	2910.19	2908.81

*Average elevation for Willow Lake are only from readings taken after 1997, when the water control structure washed out.

There are 32 ground water monitoring wells located on and adjacent to Valentine NWR. These wells were established in the 1950's by the USDI-Geological Survey, and have been monitored twice annually by refuge staff since 1970. Two wells were dry to the bottom on both the spring and fall reading (Table F2b). Spring well readings were about 6 inches below average, which may be a reflection of below average precipitation through April. Fall groundwater levels overall were approximately 10 inches below the long term average. Weather again may have played a significant role as July was a very hot, dry month. As mentioned previously, 7 of the past 10 years have had below average precipitation, so groundwater levels will take some time to recover.

Table F2b. Spring and fall USGS groundwater well readings, and the spring and fall averages as recorded from 1970-2007. Groundwater elevation is given for all wells for which the elevation is known. For wells that the elevation is not known, an index value is given.

Well No.	Well Location	Spring	Spring Ave	Fall	Fall Ave
1	N. East Long	2875.03	2874.4	2872.43	2873.3
2	SE corner S. Marsh	2893.23	2894.7	2891.93	2893.2
3	SE corner Pony	2899.37	2899.5	2896.57	2897.4
4	SE corner Cow	2919.39	2919.3	2917.59	2918.5
5	Calf Camp & Hwy 83	2896.35	2896.4	2894.05	2895.1
6	Calf Camp West	2915.53	2915.5	2912.83	2913.7
7	Little Hay West	2915.74	2916.1	2915.24	2916.0
8	Little Hay & Hwy 83	2898.28	2899.3	2896.98	2898.2
10	W. Pony & Hwy 83	2922.51	2922.9	2921.11	2922.5
13	S. Willow	2916.35	2917.2	2915.75	2917.1
14	E. McKeel	2919.97	2920.1	2918.17	2919.0
15	S. East Sweetwater	2924.87	2925.1	2924.17	2924.6
16	SE Trout	2898.27	2898.8	2896.97	2897.5
17	E. Crowe Headquarters	97.1	95.4	98.3	95.3
20	S. Watts	2923.76	2924.7	2922.96	2924.0
21	E. Pony Pasture	2923.64	2924.9	2923.34	2924.4
22	Hackberry-Dewey Canal	2923.39	2923.7	2922.39	2923.1
23	Badger Bay	2923.09	2923.7	2923.19	2923.7
25	E. Pelican	2942.42 ^a	2943.6	2942.52 ^a	2943.3
26	E. West Long	2962.68	2965.1	2962.18	2965.0
27	Dad's Recreation Area	2955.99	2957.5	2954.69	2956.3
29	NW Pelican	2948.69 ^a	2948.4	2948.69 ^a	2947.6
30	S. Dewey Marsh	2939.34	2940.5	2938.54	2939.4
31	W. Dewey Marsh	96.3	98.1	96.2	98.4
32	N. Pelican	2940.95	2941.6	2939.55	2940.8
33	NW West Long	2978.6	2979.7	2977.2	2978.9
34	Hwy 83 & W. King Flats	2923.89	2924.0	2923.09	2923.8
35	SE "21" Lake	96.6	96.2	94.4	95.3
36	W. Sweetwater & Hwy 83	2926.47	2927.0	2926.57	2926.3
38	SE West Twin	2920.44	2920.5	2918.64	2919.7
39	SW Hassle Place	94.1	94.4	94	94.0

^a These wells held no water, only damp sand at the bottom.

Biologists from the Wetland Management Institute placed ground water monitoring wells and data transmitters on a temporary wetland in Habitat Unit 18B. They are monitoring water levels under a contract with USGS, the purpose of which is refinement of the US Army Corps of Engineers wetland determination manual. They will provide us a copy of their results.

A storage closure notice was sent to Valentine NWR by the Nebraska Dept. of Water Resources. The notice prohibits us from storing any additional water in the Calf Camp Marsh. The storage right for the marsh is junior to the Spencer Dam Hydro which has made a call for water. At this time release of water from the marsh would not result in any additional water reaching Spencer Dam. During periods of high water, water from the marsh flows into Marsh Lakes which are not high enough to flow out via Plum Creek and then the Niobrara. The call is part of the water rights issue on the Niobrara River.

3. Forests

In April staff cut cedar trees in the remnant aspen stand in Habitat Unit 2B3d. There are two aspen stands on the refuge. Such stands in the Sandhills are extremely rare. Supposedly they are left over from the last glacial period. Buffalo Bruce and 3 volunteers from the Sierra Club cleared invasive cedar trees from the aspen grove located in Habitat Unit 1A3. They stacked the trees for burning this winter.

5. Grasslands

The native prairie on Valentine NWR was recognized in 1979 with the designation of the refuge as a Registered National Landmark. Four range sites are recognized within the refuge boundaries, each contributing to the diversity of the grassland. Wetland range sites are characterized by prairie cordgrass, blue-joint reed grass, sedges, goldenrods, saw-toothed sunflowers, and willows. The threatened western prairie-fringed orchid is also found in some of these wetland range sites.

Sub-irrigated range sites are located where the water table is near the soil surface. These areas support grasses more characteristic of the tallgrass prairie. Dominant species found in these areas include switchgrass, Indian grass, and big bluestem. Many of our problem plant species occur in these sub-irrigated range sites. Kentucky bluegrass, smooth brome, leafy spurge, and Canada thistle are all most prevalent here.

Sand range and low sand range sites are on lower and gently sloping hills, and are covered with native cool and warm season grasses characteristic of the mixed-grass prairie. Needle and thread, porcupine, June, western wheat, prairie sandreed, sand bluestem, sand lovegrass, little bluestem, and switch grass are prevalent on these sites. Many forbs are also found here at varying abundance and visibility depending on climatic conditions.

Choppy range sites are the high dunes that gave the Sandhills their name. These hills are generally vegetated, but may be subjected to wind erosion resulting in a blowout. These blowouts are habitat for blowout grass and the endangered

blowout penstemon. Predominant grasses in the “choppies” are blue grama, sand bluestem, prairie sandreed, sand lovegrass, sandhills muhly, and little bluestem.

Grassland management goals are to preserve, restore, and enhance the ecological diversity of indigenous flora of the Sandhills prairie. Management to meet this goal is accomplished through disturbance with grazing, haying, and fire, and rest.

7. Grazing

In 1985 the refuge habitat management program was changed and short-duration grazing started. Prior to 1985, much of the refuge grassland was grazed on a six week rotation. Authorized AUMs for each of the permittees have remained about the same when compared to 1997 levels. In 2007, there were five permittees in the program. All have had permits for many years. Grazing rates were reduced to compensate permittees for the added expense of moving cattle for short duration grazing.

In April, grazing permittees for Valentine National Wildlife Refuge were in to sign up for the 2006-2007 habitat program. AUMs and timing of grazing is similar to last year. An advertisement for grazing under the bid system was also placed in the local paper and existing permittees were contacted. One bid was received and accepted for grazing a portion of Valentine National Wildlife Refuge. The bid received was just above the minimum set and came from the neighbor adjacent to the unit bid out.

Grazing fees for 2007 were:

spring grazing treatment	\$20.07/AUM
short-duration grazing	
1 day in unit	\$12.84/AUM
2 days in unit	\$18.24AUM
3 days in unit	\$20.07/AUM
4 days in unit	\$20.80/AUM
5 days in unit	\$21.16/AUM
6 days in unit	\$22.53/AUM
7 days in unit	\$22.90/AUM
8 or more days	\$23.36/AUM
in unit	
fall	\$23.36/AUM
winter	\$23.36/AUM

The full rate of \$23.36 is an increase of \$1.00 per AUM (the maximum increase permitted per year by policy) from the 2006 fee and is based on a rate survey conducted by USDA and published in Nebraska Farm Real Estate Market

Developments. The market rate as determined by USDA for this area in 2007 was \$24.00/aum. After many years of \$1.00 increases (the maximum allowed under policy) we are finally bumping up against the market rate. The different classes of animals were also changed in 2003 and we now use the US Department of Agriculture Statistics Board conversion factors. Mature cow stayed at 1.00; mature cow with nursing calf went from 1.25 to 1.32; yearling went from .75 to .70; bulls from 1.00 to 1.50; and horse from 1.00 to 1.20.

Permittees also had their grazing bills reduced for improvements and repairs to wells, fence, tanks and other facilities needed for the program. In 2007 about \$58,445 was spent on improvements and deducted from final billings. Several projects, mostly replacement of boundary fence, were not completed and will be done in 2008 using 2007 funds. These are included in the previous total. Permittees were required to hire a contractor to repair fences in the units they used. Basically two fence contractors were hired and they split the fence repair for the five permittees. They were paid \$40.00 per hour for a crew of two, and supplied their own gas, tools, vehicle, and equipment. Total fees collected for the 2007 grazing season will be about \$32,250. This total does not include the value of the refuge share of hay put up under the bid.

The methods and expected results for the different grazing strategies are explained below. The acreage of grassland treated with each type of grazing is listed in Table F7a.

Trespass cattle were found in habitat units 36B and 35A on Valentine NWR. They went through the water gap on East Long Lake. This is almost an annual event. This is in a remote part of the refuge and the cattle were not found for quite a while/

Trespass cattle were also along Rice Lake in habitat unit 7A1. The cattle owner was contacted and removed them quickly. The water gap fence was repaired. This is a continuing problem wherever the boundary fence goes through the lakes.

Nine cow calf pairs were found on the refuge in the Dad's Lake area. They entered along the Devil's Punch Bowl water-gap. The owner was contacted and removed them the same day.

a. **Spring Grazing Treatment**

Spring grazing treatment (SGT) is done before the end of May on sub-irrigated meadow sites. The cattle are in the unit for greater than two weeks. Cattle eat or trample almost all of the residual cover. They also over graze and thus reduce undesirable cool season exotic grasses (Kentucky bluegrass and brome). Cattle can be placed in a unit to remove residual and then brought back in later to hit the cool season exotics. In some instances, cattle are brought back in at several later dates for the same purpose. Because much of the feed is in the form of old mat,

this treatment is best done by fall calving cows and not by lactating spring calving cows. Meadows that are hayed are also sometimes given this treatment to add fertilizer.

Dramatic results occur with this treatment. Exotic cool seasons, such as Kentucky bluegrass, are suppressed and native warm seasons, such as switch grass, increase in vigor and density. The disadvantage is the loss of the unit for nesting in the year of treatment and a lower waterfowl nesting density in the following year. Often the unit can however be rested for up to five years following treatment. In 2007, 20 habitat units totaling 4,416 acres received a spring grazing treatment and included some areas that were later hayed.

b. Spring Short-duration Grazing

Spring short-duration grazing (ES-SD) is grazing a unit for less than two weeks during May. Generally the cattle are in the unit for only three to five days. This type of grazing is generally done in hill units to stimulate growth of grasses, especially cool seasons. The short exposure times eliminate overgrazing. In 2007, 2 habitat units totaling 277 acres had spring short-duration grazing. Where possible units grazed later in summer the previous years are grazed using this treatment. This both varies treatment and reduces disturbance to nesting cover. Most units grazed with ES-SD show excellent growth by fall.

c. Short-duration Summer Grazing

Short-duration summer grazing (SD-S) is done from June 1 through September 1. Cattle are in a unit for less than two weeks. Most units are grazed only three to five days and the cattle moved on to the next unit. Electric fences are used to break up larger units and increase stock density. Most short-duration summer grazing was completed by mid-July. In 2007, 55 habitat units totaling 13,519 acres were short-duration summer grazed. Units grazed in this method show good growth by fall if there is adequate moisture. If little or no late summer rainfall is received re-growth is less, especially in those units grazed in late July or August.

d. Summer Grazing

Summer grazing (S) is done from June 1 through September 1 and cattle are in the unit for two weeks or longer. In 2007 no habitat units were summer grazed. When we do summer grazing it is usually in larger units which have not been cross fenced.

e. Fall Grazing

Fall grazing (F) is done from September through November. Fall grazing can reduce mulch accumulations, add fertilization, and maintain grouse leks. If done at the proper time cattle will also graze out small wetlands and leave the surrounding upland vegetation alone. Generally the wetlands have green in them while the uplands have only cured grasses. Grazing in the wetlands recycles

nutrients and provides pair habitat for ducks in the spring. Generally we have moved away from fall grazing. Fall grazing eliminates both winter cover and nesting cover in the following year. Some units were fall grazed in 2007 that will be given a spring grazing treatment in 2008. One unit was fall grazed after being hayed. This adds fertilizer to the soil and eventually improves the quality and quantity of hay harvested. In 2007, 2 habitat units totaling 377 acres were fall grazed.

f. **Winter Grazing**

Winter grazing (W) is done during the November through April period. In winter grazing, cattle are fed hay on a feed ground in a unit. The hay comes off the refuge. When the weather is harsh the cattle feed on hay but when it is nice they graze away from the hay ground. Units with a history of winter grazing combined with feeding also have excellent growth of grasses away from the feedlot. This is due to the import of energy in the form of fertilizer. Hay is cut in the meadows. Resident wildlife also utilizes waste grain from the feeding operation. Winter feeding can also be used to stabilize roads. In 2007, 4 habitat units totaling 287 acres were winter grazed.

g. **Fire**

Prescribed fire (P) and natural or wildland fire (N) are discussed in the fire section H-9.

Table F 7a. 2007 HABITAT MANAGEMENT SUMMARY				
Treatment		Units	Acres	AUMS
Rest	rest (R)	216	40,691	----
Spring	spring grazing treatment (SGT)	20	4,416	1,527
	early spring short duration (ES-SD)			
	ES-SD 1-6 days	1	152	26
	ES-SD 7-9 days	1	125	41
Summer	short duration summer (SD-S)			
	SD-S 1-3 days	28	4,976	855
	SD-S 4-7 days	26	8,254	1,211
	SD-S 8-14 days	1	289	58
	summer (S) 15-27 days	0	---	---
Fall	fall (F)	2	377	176
Winter	winter (W)	4	287	576
Hayed	hayed (H)	11	1,243	----
Fire	prescribed fire (P)	4	1,492	----
	natural fire (N)	1	<1	----
<p>*Note: some habitat units received double treatment, primarily hayed units that were also spring grazed (SGT) or fall (F) grazed units, or rest (R) units that had N or P fires.</p>				

Vegetation Monitoring

Grazing is the primary grassland management tool on Valentine National Wildlife Refuge. Grazing treatments are generally geared toward maintaining the growth and vigor of native grasses and forbs, while suppressing non-native grasses (see discussion of grazing treatments). In 1999, Valentine NWR completed its Comprehensive Conservation Plan (CCP). This plan specifies goals and objectives for management of the refuge for the next 15 years. The stated goal of habitat management on Valentine NWR is to “Preserve, restore, and enhance the ecological diversity of indigenous flora of the physiographic region described as Sandhills prairie within the Northern Great Plains” (Valentine NWR CCP 1999). The CCP also provides objectives for plant species composition, grassland cover, and vegetation structure.

To help refuge managers determine if the habitat management objectives are being met, and to monitor long-term vegetation changes, vegetation monitoring transects were established in 2003. A total of 202 random transects were established across Valentine NWR to monitor vegetation. The monitoring protocol uses 30-m transects randomly placed within habitat units. Since vegetation differs between aspects (Bragg 1998), transects were stratified by aspect (NE facing, SW facing, hilltop, swale or interdunal flat). To ensure that sampling points were well distributed, the refuge was stratified into seven management areas (Fishing Lakes, Wilderness, Hay Flats, Marsh Lakes, Pony Lake, King Flats, and East End), and a grid system was placed over each area. The grid system was used to locate random points for the start of each transect. Once the random point was reached in the field, the nearest appropriate aspect (in the order NE, SW, hilltop, interdunal flat) was selected. On NE and SW facing slopes, transects were placed perpendicular to and across the middle portion of the slope. For hilltops and flats, a random compass bearing determined the transect direction. To avoid disturbance caused by cattle or bison rubbing on the transect marker, vegetation measurements start 15-m away from the marker (the corner of the Daubenmire frame sits at 15-m, 30-m, and 45-m from the marker). On each transect, plant species composition and cover was assessed in three, 1-m x 0.5-m vegetation frames (Daubenmire 1959). Within the vegetation frame, each plant species was identified and assigned a percent cover value (1 = <1%, 2 = 2-5%, 3 = 6-15%, 4 = 16-25%, 5 = 26-50%, 6 = 51-75%, 7 = 76-95%, and 8 = >95% [Modified from Elzinga et al. 1998]). Vegetation visual obstruction (Robel et al. 1970) and litter depth were measured at the center of each vegetation frame. Litter depth was recorded to the nearest centimeter with the following exceptions: if the measuring dowel was resting on bare ground, a zero was recorded. If the dowel was resting on or in contact with horizontal vegetation from a previous year's growth, but the total accumulation was <0.5 cm, a half-centimeter was recorded. A measure of vegetation disturbance (grazing or fire) was also recorded within each vegetation frame. Disturbance by fire will be described by the percent of the plot burned using the cover values described above. Additionally, plant groups (Appendix A) were identified within a narrow belt (0.1 m) at every

half-meter interval along the 30-m transect (Grant et al. 2004). One hundred fifty-six transects were located in upland (sands and choppy sands) sandhills units, and 46 were located in subirrigated meadow units (complete protocol at C:\Documents and Settings\Melvin Nenneman\My documents\mel\Work files\Vegetation Monitoring\vegmonitor.rtf).

In 2007, all 202 transects were completed. The random distribution of transects means that the number of units sampled with a given treatment varies from year to year. For the 156 transects in upland units (sands and choppy sands), 96 transects were in rested units, and 49 transects were in disturbed (SD-S) units, 7 transects were in upland portion of units that received a SGT, and 3 transects were in units that were prescribed burned. Of the 46 transects in subirrigated meadow, 35 transects were in rest units, 4 were in SGT units, 4 were in SDS units, 2 were in SGT and H units, and 1 was in an Rx burn and SGT unit. The acres of disturbed cover for both meadow (wetland and subirrigated range) and hills (sands and choppy sands) were short of refuge objectives, and the percentage of acres in two or more years of rest exceeded refuge objectives in 2007 (Table F7b).

Table F7b. Number of acres and percent of acres in each of three cover types for meadow and hill habitats on Valentine NWR in 2007. Meadow acres include subirrigated and wetland range types, while hills include both sands and choppy sands. The CCP objectives for number of acres and percentages are approximate numbers.				
Meadow	Acres in 2007	Percent in 2007	Objective acres	Objective percentage
Disturbed cover	4701	34.5	5200	40
1 year rest	1247	9.1	2600	20
2+years rest	7687	56.4	5200	40
Hills				
Disturbed cover	15994	32.0	21900	45
1 year rest	4615	9.2	12200	25
2+years rest	29381	58.8	14600	30

The CCP objectives for grasslands on Valentine NWR include providing a mean VOR of 3 inches in disturbed (grazed) upland sites, and a mean VOR of greater than or equal to 6 inches in sites with 1 or more years of rest. In meadow units, the objectives for disturbed (grazed) units mean VOR is 3 inches. After one year of rest, this jumps to 10 inches, then 12 inches for 2 or more years of rest. In 2007, vegetation transects for hills units fell into 4 treatments: rest, SD-S, SGT, and prescribed fire. In the disturbed cover treatments (SD-S, SGT, and prescribed fire), the visual obstruction readings (VOR) exceeded the objective of approximately 3 inches (Figure F7a). The three transects in prescribed burn areas had a mean VOR of 3.8". Transects in rest units indicated that the mean VOR were about one inch shorter than CCP objectives for hills sites (Fig F7a). Although the average VOR was a bit lower in rest units, the percentage of VOR exceeding 6" was considerably higher in rest units than in units that had been disturbed (Fig F7b). In grazed units, the percentage of VOR less than 3"

comprised the bulk of the readings, while the distribution of VOR in rest units was much more even. This would seem to indicate that grazing treatments are having an effect, reducing the VOR within the disturbed units, which in turn should stimulate the grazed plants to produce more root mass and more above-ground growth in the next growing season. It also shows that even in grazed units, there remains some ground cover that exceeds 6", so that some taller nesting and escape cover remains in these units. The CCP also lists some broad guidelines for percent cover values for grasses, grass-like plants, forbs and shrubs. For sands and choppy sands range sites, the desired species composition is approximately 85% grasses, 5% grass-like plants, 10% forbs, and 5% shrubs. Line transect data from 2007 indicates the following plant type frequencies: 74% grasses, 4% grass-like, 12% forbs, and 5% shrubs. About 4% of the plant frequencies were exotic plants, primarily Kentucky bluegrass. Percent cover values estimated in Daubenmire frames showed the following percentages: 63% grass, 11% grass-like, 20% forbs, and 5% shrubs. Based on measured plant composition, grasslands in the sands and choppy sands range sites have roughly the desired plant composition. Grass cover measured by aerial percentage is likely somewhat lower, and forb cover somewhat higher since the broad leaves of forbs increase their aerial appearance. The line transects reflect the entire length of the transect, and probably provide a better picture of the plant community.

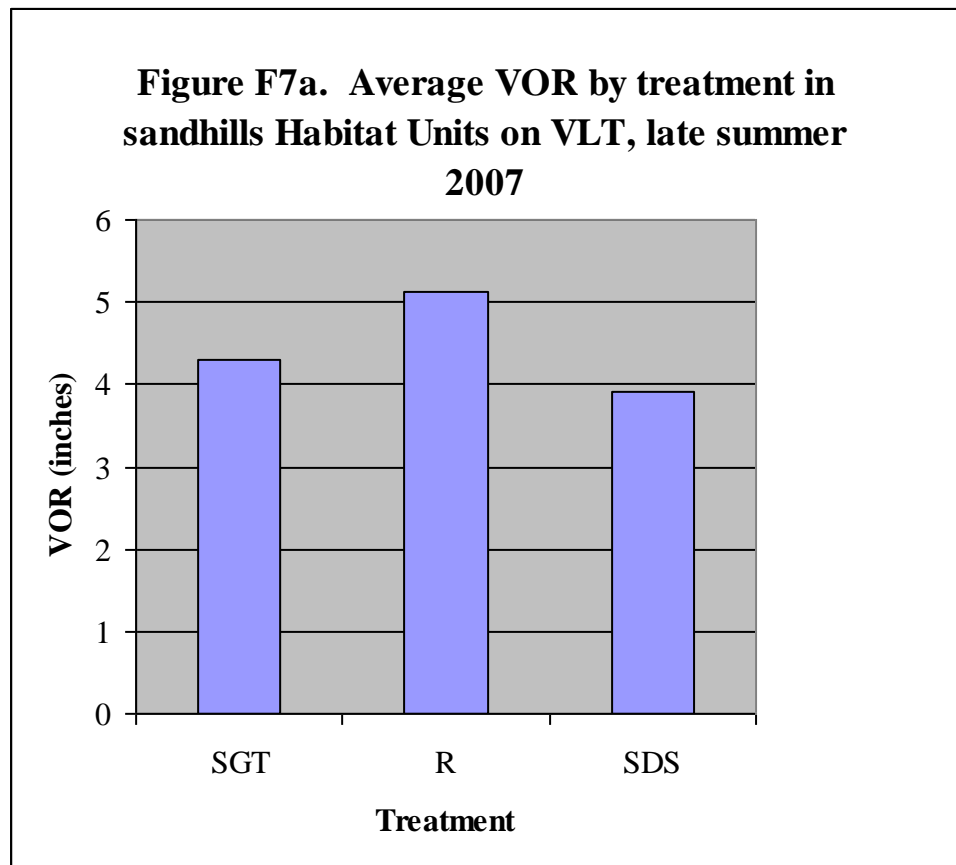
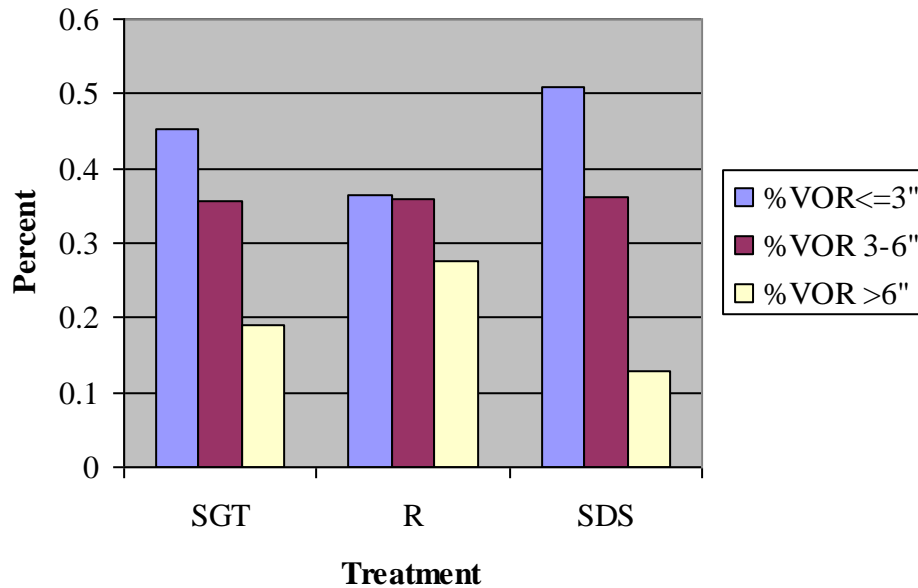
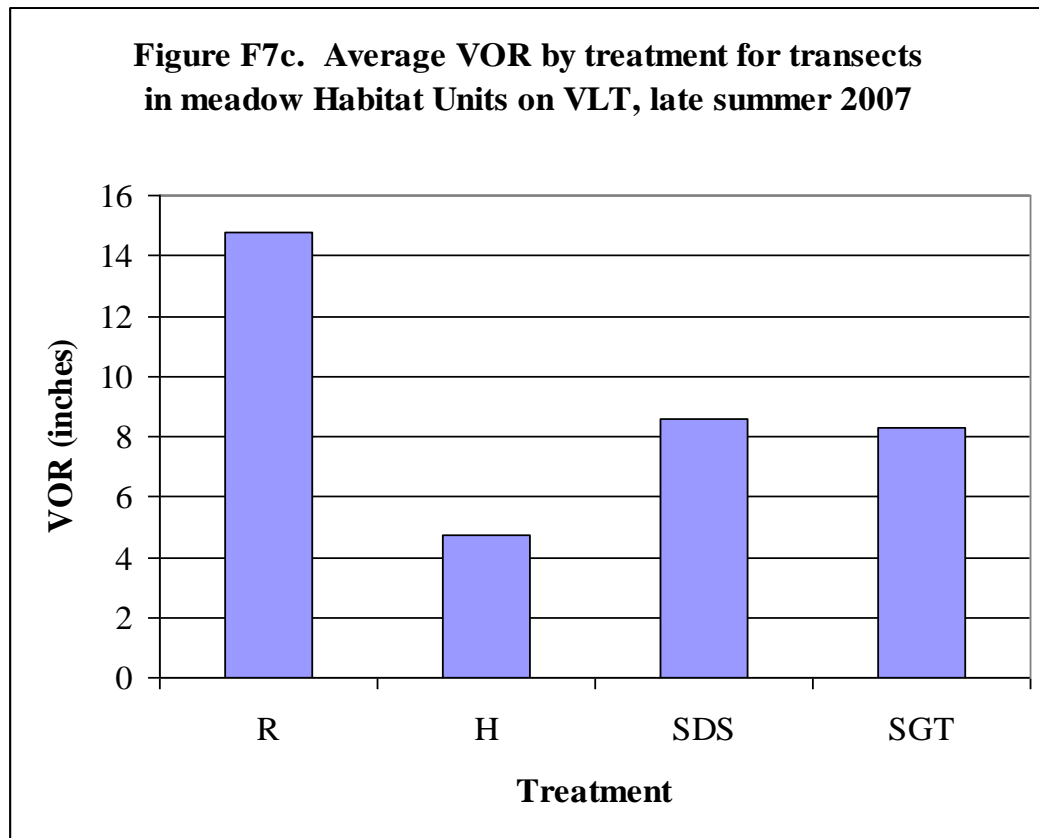


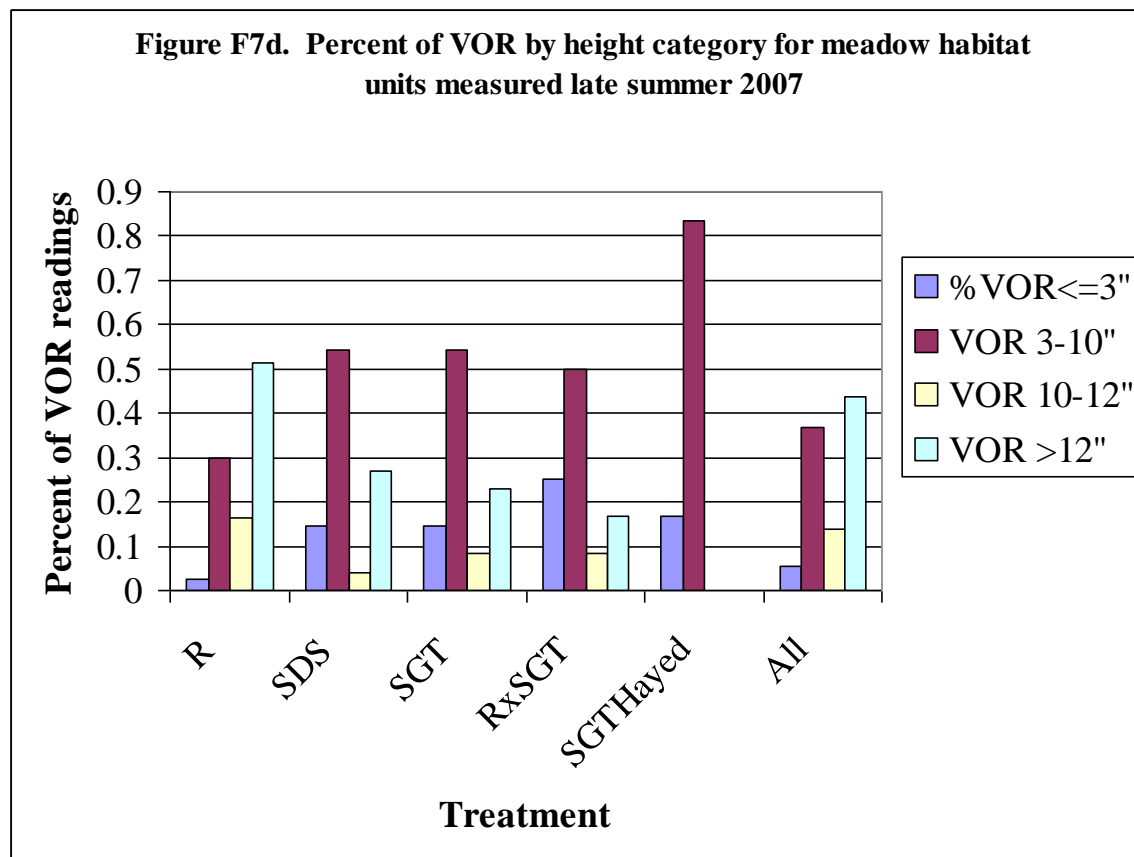
Figure F7b. Percent of VOR by height category for sandhills habitat units on VLT, late summer 2007



Transects in subirrigated and wetland range sites fell into the following treatments: rest (35), SGT (4), SDS (4), SGT-H (2), and Rx fire-SGT (1). Mean VOR values for the primary meadow treatments all exceeded the CCP objectives (Fig. F7c). VOR in other disturbed meadow sites also exceeded the 3" objective for these meadows (SDS = 8.6", SGT-H = 4.75", and Rx-SGT = 7.8"). Given that vegetation monitoring is done near the end of the growing season, and the SGT is done early in the growing season, it is not too surprising that mean VOR in these meadows is near the objective 1 year rest value(10"). Nearly 70% of the VOR measures in rested meadow units were 10" or more, while in all of the disturbed meadows the VOR were dominated by values <10". Hayed units had the least diversity in vegetation structure, with no values of 10" or more. The grazed units all had some tall structure available by the end of the growing season (Fig. F7d). The broad guidelines for plant species composition for meadows are about 80% grasses, 10% grass-like plants, 5% forbs, and 5% shrubs. Line transect data for plant composition in meadows showed 78% grass, 8% grass-like, 8% forbs, and 4% shrubs. The grass total included 35% Kentucky bluegrass and 3% smooth brome. Cover values estimated from Daubenmire frames were 61% grass, 14% grass-like, 21% forb, and 3% shrub. These values, as with hills units, indicate that the plant composition is roughly approaching the CCP objectives. Of concern is the relatively high frequency of Kentucky bluegrass dominated intervals recorded in the meadows. These data seem to indicate a need for more

aggressive grazing and/or burning management to suppress Kentucky bluegrass and promote the vigor of native warm season grasses.





8. Haying

About 557 acres of sandy, sub-irrigated, and wetland range sites were mowed and yielded 734 tons of hay. All or parts of 11 habitat units were mowed and hayed. GPS coordinates for hayed acres were not obtained this year. Previous years GPS information was used.

The method of charging for permittee hay was changed in 2001. Now hay is put up on a 50/50 split with the permittee taking half home and feeding the other half back on the refuge at the full rate of \$23.36/AUM in the winter treatment.

An advertisement for hay to be put up on bid at Valentine National Wildlife Refuge was placed in the local newspaper. The hay is needed for stock at Fort Niobrara National Wildlife Refuge. Four bids were received and the high bid, a 50/50 split, was accepted for haying a portion of Valentine National Wildlife Refuge. The permittee put up 357 bales which were split as in the bid. Half of the bales were hauled to Fort Niobrara by the permittee.

Most of the meadows hayed are also grazed either in the fall or spring. This adds fertilization to the meadows and improves the quality and quantity of hay produced. In general we try to mow low sites with mostly reed and cord grasses.

Haying is used to provide fire protection for facilities, browse areas for Canada geese, sandhill cranes, prairie grouse, and deer and to provide hay to Fort Niobrara NWR. Mowing can also open up small wetlands for waterfowl pair habitat. Hay is also used in the winter treatment described under the grazing section of this report.

Areas to be hayed, in which we have found the endangered prairie white-fringed orchid in the past, were searched on foot. Searches were done when the plant was in bloom. Plants found were marked with lathe with orange tops and they area not mowed. Haying may be of some benefit to the orchid as some of the plants found on the refuge are in areas that are annually hayed.

9. Fire Management

Lindvall, Nenneman, and Kime all completed fire fighter physicals. Nenneman passed his physical and is red carded. In 2006 Kime and Lindvall both failed the hearing test and sought waivers so they could continue fighting wild fires. Lindvall and Kime were allowed to be rated moderate but not arduous. This means we can continue with prescribed fire but not fight wildfire including escapes of prescribed fires. Both supplied extensive information in hopes of receiving the waivers. Both were denied. Lindvall appealed the denial to a higher level but was again denied. The denial of waivers will all but shut down immediate response to fires on Valentine NWR. When the seasonal firefighters leave, only one red carded firefighter is available at Valentine NWR. One person will not be able to respond in an engine. The nearest help is from Fort Niobrara NWR (35 miles) and Valentine Rural (30 miles).

Nenneman helped on a prescribed burn at LaCreek NWR on 13 Mar. En route to LaCreek, Nenneman and Melvin put out a small, uncontained fire burning in the ditch about 5 miles west of Cody, NE. The prescribed fire went well, despite having to make a few adjustments in the ignition plan to match weather conditions at the site. Personnel at LaCreek felt that the burn accomplished the objectives.

In March, Colby Crawford and Lindvall worked on preparing the fire plan for a prescribed burn between Rice and Duck lakes on Valentine NWR. Nenneman provided the necessary maps required in the burn plan.

On April 21 a wildfire occurred on Valentine NWR. The fire was lightning started and was put out by rain before staff could reach the site. The site of the fire was not located.

Four prescribed fires were completed at Valentine NWR with the help of LaCreek, Crescent Lake, Forest Service, and NPS crews.

Part of Habitat Unit 18C1, 90 acres, was burned on April 30. The fire burned 100 percent of the vegetation including the wetlands. Some of the cottonwoods along the lake shore were burned but probably not enough for control. This unit was also grazed during May. The fire and grazing combination is designed to reduce cool season exotics and increase warm season natives. The unit was checked later in the year and some but not all of the trees were killed. Canada thistle grew well following the fire. Forbs and grasses increased.

All of Habitat Unit 16A1 on the east end of Dewey Lake was burned on May 1. The fire was 110 acres in size and included grassland and marsh. Cedar control was fair with most of the small and some of the large trees consumed. This unit quickly greened up and attracted ibis, waterfowl, and pheasants. Mow lines and foam was used to protect interior fences. The remaining cedars will need to be cut.

One hundred and twenty nine acres in Habitat Unit 7A1, Rice and Duck Lakes, was burned on May 8. Cedar control was poor with only a small fraction of the trees burned. Some dense cottonwood stands along the lake shore burned. A few of the larger willows also burned. Later checks showed that most of the cottonwoods and willows sprouted from roots. The marsh burned except for areas adjacent to the lake. Most of the cedar trees that were cut 2 years ago also burned. Forbs and grasses increased.

Natural Area 1 was burned on May 9 (Fig F9a). This fire was 945 acres and is the largest prescribed fire ever done on Valentine NWR. Control of cedars was sporadic. Some small trees did not burn and some large trees, including some in tree rows, burned. Control was much better than that seen on the Rice/Duck burn the day before. Brome grass in the unit burned early on in the fire but not later as temps cooled, humidity came up, and the winds died down. Not all the area within the perimeter burned, there were some skips. Unfortunately the chip piles for the nature trail burned. There was some slop over along the county road that was caused by burning vines sending embers across the road.



Figure F9a. Photo overlooking the prescribed burn in NA1.

In December, six brush piles at various locations on Valentine NWR were burned while there was snow on the ground. These piles were located along Dewey and Watts Dikes, Little Hay Road, and Natural Area Number 1.

10. **Pest Management**

A pesticide use proposal was submitted and approved for fall application of Milestone on Canada thistle via helicopter. RO equipment rental funds are paying for the flying. The helicopter spraying was put off until spring. Rain and high winds kept delaying the work until after the thistle was going dormant.

ATV's were used to spray Canada thistle with Rodeo and Milestone in late June and early July on Valentine NWR. Glyphosate was used on 111 patches in 30 habitat units for a total of 13 acres treated (using visual estimate of acres sprayed). Broadcast spraying was used on 80 areas and spot treatment on 30. Five hundred and seventy six ounces of chemical was used. If the amount of chemical used and rate (64 oz/acre) is used to estimate the acreage sprayed the acres sprayed comes out to 9 acres. Milestone was used on 63 patches in 16 habitat units for a total of 40 acres (using visual estimation of acres sprayed). Broadcast spray was

used on 58 patches and spot treatment on 5. One hundred and thirty five ounces of chemical was used. If the amount of chemical and rate (7 oz/acre) are used to estimate the acreage treated, the estimate is 19 acres. The two estimates are very different in this case. Eight staff days were used in spraying. Not all the thistle on the refuge was sprayed.

Refuge Manager Lindvall attended the Leafy Spurge Task Force Annual meeting held in Ainsworth on August 1 and 2. Bio control of spurge and the new threat of salt cedar were discussed at the meeting. The group has sponsored large releases of bio control agents for spurge in the Sandhills area. Salt cedar is not yet a problem here but is in the nearby Platte River drainage.

A contract sprayer treated about 50 acres of leafy spurge in habitat units 15C1-4, 8E3, and 13A with 8 oz per acre of Plateau herbicide. Cost of the contract spraying was \$1,467. The refuge provided the 3.25 gallons of Plateau. Refuge staff sprayed in habitat units 2B3, 31A, 35B, 34C1 trees, 34E3 trees, 34E3, and 35A(s) using 9 pints of herbicide. All known patches of spurge were treated. The amount of chemical sprayed matched fairly closely to the estimated acres.

Refuge Manager Lindvall attended a cedar tree cutting demonstration hosted by the North Central RC and D. About 20 vendors were on hand with a variety of tree cutting machines. No one machine appears suitable for all applications. Prices ranged from \$2,000 to \$15,000 for the cutting attachments. Rental prices were from \$85 to \$100 with operator.

Invasive cottonwood and willow trees were cut in habitat units 15C1-4 and 8E3 at Valentine NWR using a bushwhacker mower. The trees were about the maximum size that could be cut with the mower. We cut about 6 acres of trees that were mostly in dense thickets. Some small clumps or individual trees were cut with a chain saw. The trees have grown up as a result of drought, lack of fire, and less intense grazing. Several other areas on the refuge are in need of tree cutting. The meadow we cut trees in this year looks a lot more like a prairie and less like a forest following the tree clearing. The trees will likely sprout in the spring and need to be treated with herbicide.

12. Wilderness and Special Areas

In 2005, Valentine National Wildlife Refuge was designated a Nebraska Important Bird Area by the Audubon Society. The IBA program is an inventory of the key sites within a state that support significant numbers and high diversity of birds. The IBA program is a conservation and education effort of the National Audubon Society and has no regulatory authority. Our application was reviewed by a technical committee which commented on the high diversity of species and the large population of greater prairie chickens found on Valentine National Wildlife Refuge.

The refuge is also recognized as an Important Bird Area by the American Bird Conservancy (www.abcbirds.org). The refuge also became a Registered Natural Landmark in 1979.

The south west part of the refuge is also a proposed wilderness area. The area designated is about 15,937 acres in size.

13. Easement Monitoring

Three FmHA easements (Mead, Wagner, Yellowthroat) and one development easement are managed out of Valentine National Wildlife Refuge. All were visited during the year. Information on the 3 FMHA easements managed by Valentine NWR was provided for the GAO audit of easements. We recommend retaining all easements.

Mead FmHa Easement (Keya Paha County)

A special use permit authorizing a prescribed burn and spring graze on a portion of the Mead Easement was issued to the owners of the land. Nebraska Game and Parks is funding the burn through the Landowner Incentive Program, "LIP." The burn and graze will control cedars and brome on a portion of the easement. Lines were prepared for the fire but it was not completed in 2007. The graze was completed. Hopefully the prescribed burn will be done in 2008.

Wagner FmHa Easement (Knox County)

The Wagner FmHA (Knox County) easement was visited on June 1. No violations were noted on the land south of the county road. The owner is working with FWS Partners Program to restore a wetland on the property.

A special use permit was issued to the landowners of the south part of the Wagner easement in Knox County. The permit is to allow a wetland enhancement that they are planning under a WEA with the Private Lands program.

The work will probably need to wait until the ground dries up. The land on the north side of the county road has not changed from last years visit. The area could use a spring graze, prescribed fire, and tree clearing. The owner put up a 4 by 8 foot crude hunting blind on the property. A patch of leafy spurge was noted just below the blind.

Yellowthroat FmHA Easement

This easement is visited regularly as the fee title Yellowthroat Wildlife Management Area is adjacent. The landowner had not grazed the easement for many years as he had it in a farm program. There is an outdated haying and

grazing plan for the area. In 2007 the owner grazed the area outside of the parameters of the plan. He was contacted and we will update the plan and implement it in 2008. We also have an access easement to our fee title land that goes from the highway to the entrance to the Yellowthroat Wildlife Management Area.

The Fish and Wildlife Service also has an easement on 1,324.25 acres of land that was formerly part of Valentine NWR. This land was traded away for other lands in what we refer to as the Colburn exchange. The easement was habitat units 24B1, 24B2, 12B3, 24D (N), 24D(S), 12B4, and 12B5 which were traded for habitat units 38A, 37B, and 37C which are now part of the refuge. The easement was placed on the land to protect the endangered American burying beetle. The easement restricts development on the site. We go buy this land as we do refuge work and noted no developments.

Refuge Manger Lindvall worked with NRCS and Nebraska Game and Parks on Wetland Reserve Program evaluations and compatible use plans. These easements are hard to manage as few are with the original owners and the new owners are often out of compliance with the compatible use plans.

Refuge Manger Lindvall reviewed the Jacobi Wetland Reserve Easement in Rock County as part of the B Team. The owner of the easement has been repeatedly out of compliance with the last 5 year compatible use plan. The team decided that no grazing will be allowed in 2007 due to the non-compliance with the past plan.

Wetland Reserve Program easements in Rock County were visited along with Game and Parks and NRCS staff on May 31. This year was different than others in that we got compliance with the compatible use plans and rain had put water back in the wetlands. It was nice to see some progress on these easements. Parks staff on June 20. The easements had good grass, wetlands with water, and compliance with grazing and haying plans. This has not always been the case in. Trees invading grasslands continues to be a problem on some of the easements.

A site visit was made to a Wetland Reserve Program intention in Boyd County. The landowner is interested in putting wetlands along the Niobrara River into the program. Only one small wetland has been drained. Most of the rest is in good condition and has received additional water backed up by the sediments forming from Spencer Dam. It is not sure how this type of wetland, non-cropped and non-altered, might fit in the program. The adjacent county has similar areas that have been put in WRP and NRCS will check with them.

G. WILDLIFE

1. Wildlife Diversity

Wildlife diversity, with the exception of large ungulates and their predators, is relatively unchanged in the Nebraska Sandhills as compared to most areas of the United States. Native grasslands dominate the local flora, and indigenous wildlife is well represented. Threats to this largely intact grassland system are changes in the disturbances that led to the evolution of the grassland system and invading exotic species. While much is not known about historic disturbance, fires and large bison herds undoubtedly played a role in shaping this grassland system. A bison vertebra, with the long spine that extends into the buffalo hump, was found along the dry shoreline of the Marsh Lakes at Valentine NWR in 2002, and a partial buffalo skull was found during the renovation of Hackberry Lake in 2004.

Maintenance and enhancement of the Sandhills prairie is necessary to ensure the ecological integrity of the flora and fauna found on Valentine NWR. Grassland management on the refuge incorporates grazing, mowing, rest and prescribed burning to accomplish refuge objectives. Nesting information collected at the refuge indicates that management for greater quantities of tall, vigorous native vegetation provides the best nesting cover for migratory waterfowl and resident prairie grouse. This type of cover is often lacking on private land, thus the refuge has sought to use grassland disturbance to maintain grassland vigor without compromising nesting cover.

Refuge wetland management is primarily accomplished to maintain wetland quality. Size limits on northern pike, capture of adults, and chemical renovation of lakes have all been used to reduce carp populations. Carp have detrimental effects on water quality, and subsequent plant and invertebrate production which play an important role in waterfowl production. Removal of carp has not been accomplished on refuge lakes, although renovations in the 1970's and 1980's removed carp for a few years. Current management using northern pike seems to be working to limit carp population growth.

2. Endangered and/or Threatened Species

a. Bald Eagle

Bald eagles were observed throughout the month of Jan. Bald Eagles use Valentine NWR primarily during migrations, and are usually seen on the refuge in low numbers during the spring and fall. Occasionally large numbers will show up in response to a fish kill. No Bald Eagles have been observed nesting on the Refuge.

b. Peregrine Falcon

Migrating peregrine falcons are usually observed traveling through Valentine NWR in the spring (generally April) and in the fall (generally Sept-Nov). None were observed in 2007.

c. Whooping Crane

Whooping cranes are occasional visitors to the refuge, sometimes stopping briefly during migration to feed on hayed meadows or rest on mudflats. No Whooping Cranes were observed on the ground on the refuge during 2007. During a big Sandhill Crane migration day (20 Oct), a flock of 30-35 Whooping Cranes were observed migrating over Valentine NWR. The cranes were observed over H.U. 28B2 at about 4:00 in the afternoon. These birds were obviously migrating, and were last seen heading south off of the refuge. This was an unusually large flock of Whooping Cranes, and very neat to see.

d. Western Prairie Fringed Orchid

Surveys for flowering Western Prairie Fringed Orchids were conducted in almost all the locations on Valentine NWR from 9-13 Jul 2007. Only the HU 36A location was not visited during flowering due to the amount of time required to physically get to the site. Five privately-owned meadows have had orchids in the past. These meadows were scanned for orchids while slowly passing by on the road, and no orchids were observed this year. Several of these meadows had already been hayed by the time these meadows were checked, thus if orchids had been there they would have been mowed. Twelve locations on the refuge were known to have orchids, and six of these had flowering orchids in 2007 (Table G2d1). In addition to these locations, orchids were found in habitat units 15C3 and 13A. A total of 103 flowering orchids were observed – down 122 from last year. It is difficult to make any broad statements about the number of flowering orchids observed from year to year since the search effort has not been standardized and orchids have been found in several locations not previously counted, making year to year variation hard to interpret. The number of flowering orchids has varied widely, from zero observed in 2002, to 314 observed in 2005. The amount of precipitation received during the months of Apr-Jun does seem to have some impact on the number of flowering orchids seen, and indeed, these two variables are somewhat correlated. Other measures of precipitation (August precipitation, Oct-Mar precipitation, total precipitation) did not seem to show a strong relationship to the number of flowering orchids. August precipitation and Oct-Mar precipitation accounted for 77% of the variation in the number of flowering orchids observed at Pipestone National Monument in MN. However, demographic monitoring at another site indicates that spring precipitation may have a greater impact than fall precipitation. Drought conditions seem to strongly depress the number of orchid observed by reducing the number of plants producing above ground growth, increasing the proportion of vegetative plants, or both. All of these studies indicate that precipitation is an important component for western prairie fringed orchids. In general, the pattern of flowering orchids over the last 5 years seems to follow precipitation (and probably soil moisture

conditions). Extremely dry conditions in 2002-2003 resulted in very few orchids observed, while in 2005, abundant rainfall in April and June appear to have driven the highest orchid count on Valentine NWR. Although no soil moisture measurements were made in 2007, differences in the number of orchids observed among sites seem to support the idea that soil moisture is also important to this plant. The west half of HU 32B2 seemed unusually dry, and only a few orchids (5) were observed here. On the east end of the unit, the gradient into the marsh is more gradual and soil moisture apparently was apparently more abundant, with 17 orchids observed here. Thus this anecdotal evidence on moisture conditions from Valentine NWR seems to reflect patterns found in other parts of the orchid's range.

Table G2d1. Location, number of orchids, and number of flowers observed on Valentine NWR, July 2007.		
Habitat Unit	Number of Orchids	Number of Flowers
32B2	22	123
29A1	8	78
24C4	26	242
25B Sweetwater	0	0
25B Cow Lake	0	0
Hackberry HQ ROW	0	0
Hwy 83 ROW/29A1	5	36
18B7	0	0
36A	0	0
21A3	2	10
21A4	0	0
16E4	40	412
7A2	0	0
15C3	5	75
13A	8	142

e. Blowout Penstemon

Blowout penstemon, *Penstemon haydenii*, was listed as an endangered species in September 1987. This species is endemic to the Nebraska Sandhills, and grows in open sand blowouts that are generally found in choppy sand range sites. Blowouts result from disturbance and are maintained primarily by wind erosion, and blowout penstemon grows in and adjacent to these open sand areas.

Naturally occurring blowout penstemon has been documented at 7 locations on Valentine NWR, and at locations on the Ballard Marsh State Special Use Area

and the Crowe Ranch adjacent to the refuge. From 1996-2001, blowout penstemon seedlings were transplanted into blowouts at various locations on the refuge. These transplants were done by Dr. James Stubbendieck, University of Nebraska-Lincoln, with a grant from the Nebraska Environmental Trust. During this period, approximately 8000 seedlings were transplanted onto the refuge. No seedlings were transplanted in 2002-2003, and an additional 1078 seedlings were transplanted in 2004. In 2005, we began with the first of three years of transplanting about 2350 seedlings. Counts of surviving transplants were initiated in 1999, and there had been a slow decrease in the number of plants counted until 2004. Unusually dry weather from 1999-2004 may partially explain the decrease observed during this time, but there are many unanswered questions about blowout penstemon life history that may also play a role. From 2005-2007, a slow increase in the total number of plants counted has brought the number of plants back up near levels observed in 2001 (Figure G2e.1).

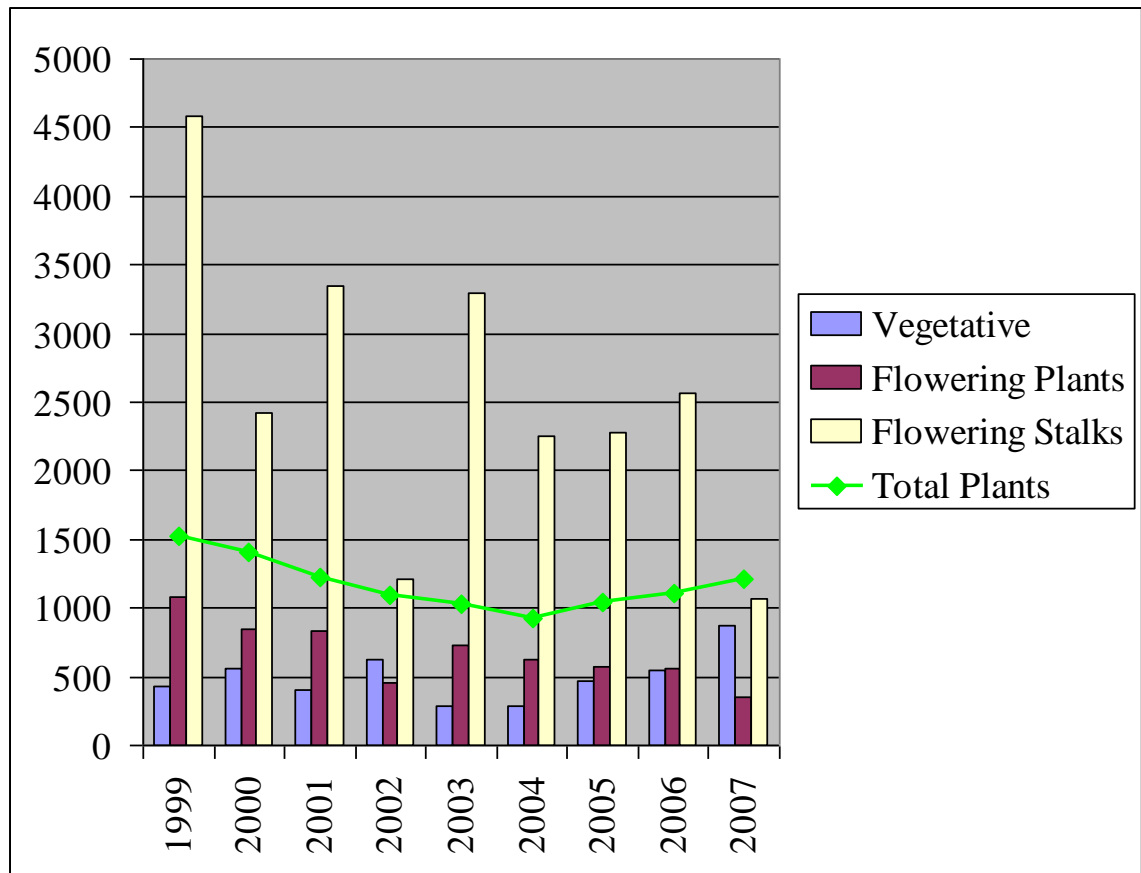


Figure G2e.1. Counts of blowout penstemon transplants on Valentine NWR from their inception in 1999 to present. The data presented here represent seedlings transplanted from 1996-2004 (no seedlings transplanted in 2002-2003). Transplants from 2005 and 2006 were not included to provide a snapshot of seedling survival from these previous efforts.

2007 Blowout Penstemon activities: Nenneman picked up 46 trays (4508 plants) of blowout penstemon seedlings from the University of Nebraska-Lincoln on 7 May. These plants were grown by Jim Stubbendieck and Kay Kottas under the final year of a three year endangered species showing success grant. Marlin French picked up 23 trays (2254 plants) to transplant at Crescent Lake NWR, and the remaining plants were transplanted on Valentine NWR. A group of school students from the Walnut Middle School in Grand Island, Nebraska assisted in planting seedlings at Valentine. These students were involved in a project where they did research on blowout penstemon, grew some seedlings at the school, then did a camping/transplanting trip to the refuge to see where penstemon would grow naturally, and to plant the seedlings they started in the classroom. The kids did a great job, helping to plant 25 trays (2450 penstemon seedling) in 14 blowouts on the refuge over two days. Seedlings in 8 blowouts were planted with sand from a blowout where blowout penstemon is currently growing (1470 plants), and the remaining plants (980) were planted without additional sand to act as a control. With the transplants this year, there are 71 blowout sites that have had penstemon transplanted since 1996.

Almost all of the blowouts known to have blowout penstemon on Valentine NWR were visited during June. In the transplanted population, there had been a slow decline in the number of plants observed from 1999-2004. Beginning in 2005, however, there has been an increasing trend in the number of plants. Some of this can probably be attributed to the additions of transplanted seedlings into existing transplant blowouts in 2004. Also contributing this year was some apparent seedling production in three of the blowouts initially planted in 1996-1997.

Counts this year saw the lowest number of flowering plants recorded since counts began in 1999, but the highest number of vegetative plants. Transplants from 2005 and 2006 also are contributing (Figure G2e2), with an additional 245 and 335 plants observed from those years, respectively. In the 2005 transplants, 50 flowering plants were observed, and in the 2006 transplants, 28 flowering plants were observed. The total number of blowout penstemon plants observed in 2007 (not counting transplants from 2005-2007) is similar to 2001 numbers. When transplants from 2005-2006 are added, the total of 1787 plants is the highest number recorded since counts commenced in 1999. Seven locations on Valentine NWR have naturally occurring blowout penstemon plants. In 2007, only 2 sites had penstemon; two sites were not checked, two sites with a single plant did not have penstemon in 2007, and one site has not had a plant for > 5 years. These naturally occurring sites have consistently had between 15 and 26 plants from 2001-2007 (Table G2e.1).

Table G 2e.1. Blowout penstemon (<i>Penstemon haydenii</i>) counts on Valentine NWR from 2003-2007. Most of these plants are the results of transplanted seedling penstemons begun in 1996. Annual surveys for blowout penstemon have been conducted since 1999.					
Plant growth form	2003	2004	2005	2006	2007
Vegetative	290	289	474	546	871
Flowering	733	630	570	565	346
Flowering stems	3294	2250	2282	2565	1071
Total plants	1023	919	1044	1111	1217
Native plants	20	15	20	17	26
Transplants	0	1078	2352	2548	2450



Figure G2e2. Blowout penstemon seedlings planted in 2005 were doing well in some blowouts, as evidenced by these flowering plants in HU 18B5 (MN).

f. Wolves

No wolves have been present of Valentine NWR since their extirpation from NE around the turn of the century (late 1800's). There has been recent documentation of wolves in Nebraska, but none near the refuge. Deer hunters reported a wolf on the refuge in 2003, but the report could not be confirmed. There have been no further reports of wolves on the refuge since this unconfirmed sighting.

g. American Burying Beetle

No work was conducted on American Burying Beetles in 2007. A brief survey of these beetles was conducted in August 2005, in which a minimum of 58 American burying beetles were captured and released. The beetles seemed well distributed across the refuge, and in fairly good numbers, although American burying beetles were much less abundant than *Nicrophorus carolinus* and *N. marginatus*.

3. Waterfowl

a. Ducks

No specific data were collected on duck use or production at Valentine NWR in 2007. Anecdotal observations of ducks through the year include the following observations. With ice out (11-12 March), a large number of waterfowl began showing up as they began moving northward on their spring migration. Large numbers of pintails were noted on Hackberry Lake near the refuge headquarters, particularly during the 2nd and 3rd week of March. Most other species of ducks were also observed during the month (mallard, gadwall, green-winged teal, blue-winged teal, American wigeon, shoveler, wood duck, redhead, ring-necked duck, canvasback, lesser scaup, bufflehead, and common merganser). No unusual visitors were observed during this influx of waterfowl.

On 22 June, the airboat was used to survey birds on the Marsh Lakes. Only four duck broods were observed, which is low for the Marsh Lakes area. Several factors probably are important in lower waterfowl numbers, one of which is related to when the survey was conducted. Midday is not the optimal time to conduct brood surveys, as the broods often loaf in cover during the middle of the day. Some broods were probably missed because of this. Other factors are related to the environment, with waterfowl numbers likely reduced by physical changes to habitat in the Marsh Lakes and the reduced availability of pair ponds in early spring. Eight species of waterfowl were observed, along with 10 species of marsh and/or water birds. Black crowned night herons were the most numerous species observed, followed by American white pelicans. Mallards were the most abundant duck observed. No colonies of nesting water birds were evident in this survey.

The fall migration began in Aug with some blue-winged teal have frequenting the shallow west end of Hackberry Lake. A group of 60-100 birds has been observed in the shallows here since about the middle of the month. Apparently the shallow

water is providing good feeding opportunities for these birds. A few wood ducks have also been seen in this area.

The estimated number of waterfowl using Dewey and the Marsh lakes has fluctuated considerably through the month of Oct. For Dewey Lake, the estimated number of ducks peaked at 6750 birds on the 13 Oct, and on the Marsh Lakes, the estimated number was highest on 27 Oct, with 4950 ducks reported. Although it is not possible to compare surveys between weeks directly (different observers, poor weather conditions, etc), it seems pretty clear that there has been some waterfowl movement during Oct. Duck numbers declined through the month of Nov, and most ducks left the Refuge when the lakes froze over on 22 Nov.

b. Geese

No specific data were collected on Canada goose use or production at Valentine NWR in 2007. Pairs of Canada geese were observed across the refuge in March as they began to establish nesting territories. Good numbers of migrants were also been seen on refuge lakes and wetlands. Refuge staff occasionally reported seeing goose broods while they were working on other projects on the Refuge. Canada geese have done well in the Sandhills since they were re-established in the 1960's. It seems likely that the refuge objective of having about 100 pairs of nesting Canada Geese has not been met over the past several years, as there would have to be at least one pair on virtually all refuge wetlands to meet this objective.

c. Trumpeter Swan

Trumpeter swans are observed periodically on the refuge throughout the year. With ice-out, Trumpeter swans have been observed on refuge wetlands during March. Ten swans were seen on Calf Camp Marsh on 15 Mar, and smaller numbers have been seen on other wetlands

During April, pairs of trumpeter swans have been spotted on the following wetlands: south of Willow Lake, Center Lake, East Sweetwater Lake, Cow Lake, Little Hay Lake, wetlands on west end of Dewey Lake, wetlands in Calf Camp, and a wetland in 8D3. These wetlands will be checked later in the year to see if the pairs are breeding. So far only two breeding pairs have been documented on the refuge, although more swans have been seen in recent years.

Two pairs of trumpeter swans are known to have produced cygnets this year. The pair on Center Lake initially had three cygnets, but only had one remaining on 01 Aug. On 31 Jul, a pair of swans was observed on East Sweetwater Lake with 8 cygnets; this may be the largest brood of swans ever observed on Valentine NWR. Two adults and a cygnet trumpeter swan were observed on Center Lake on 26 Oct. This is likely the pair that nested on the lake and they have not headed elsewhere for the winter.

4. Marsh and Water Birds

a. Sandhill Cranes

Flocks of Sandhill Cranes were observed heading north during the third week of March. No cranes were observed on the refuge during the month, which is not unusual for the spring migration.

Large numbers of Sandhill Cranes were observed heading south during October, with the majority of these birds overflying the refuge. No Sandhill Cranes were observed on the ground during this time. On 20 Oct, conditions for migration must have been almost ideal, a sunny day with highs in the mid-60's and a north wind. Flocks of cranes were observed heading south all afternoon.

5. Shorebirds, Gulls, Terns and Allied Species

There is no survey for shorebirds, gulls, or terns on Valentine NWR. Much of the shorebird use of the refuge is during spring and fall migrations. Upland sandpipers, killdeer, willets, common snipe, long-billed curlew, Wilson's phalarope, and American avocets have all nested on the refuge. Gulls can be seen on the refuge nearly year-round, although the greatest numbers tend to occur from late summer into the early winter. Black and Forster's terns are both relatively common breeders on the refuge through the spring and summer months.

Observations of these species in 2007 include the following. An upland sandpiper nest with 4 eggs was found in HU 18A1 on 06 June.

Large numbers of shorebirds were observed on the Marsh Lakes during avian influenza surveys. The estimated number of shorebirds increased from survey 1 on 22 Sept. to survey 2 on 29 Sept. Species observed was similar between the two weeks, with yellowlegs (greater and lesser), killdeer, long-billed dowitcher, American avocet, common snipe, and a mix of peeps (most likely including Pectoral, Baird's, Semipalmated, and Least sandpipers). The number of large gulls (probably Ring-billed and Herring) also increased from the first survey to the second. Most terns have apparently made their way elsewhere, as only one tern was observed on the first survey, and none have been observed since.

The estimated number of shorebirds observed on the Marsh Lakes during avian influenza surveillance peaked on 13 Oct at 4000 shorebirds. At the end of the month, observations of shorebirds had dwindled to less than 100 birds. The number of gulls also appeared to peak in mid-Oct.

6. Raptors

Incidental observations of raptors indicate that there are several pairs of red-tailed hawks, 1-2 pairs of Swainson's hawks, a few northern harriers, and several kestrels nesting on the refuge. A red-tailed hawk nest with at least two nestlings was observed in a willow tree at the west end of Homestead Lake on 12 Jun. The nestlings appeared to be approximately 2 weeks old.

In Jul, an Accipiter hawk nest was found in the CCC cedar tree planting on the southwest shore of Hackberry Lake. The nest was found during the 1st week of Jul, and had 4 young that were about 3 weeks old. The nestlings looked small for

Cooper's Hawks, so it is possible that these were Sharp-shinned Hawks. Confirmation of the species identification was not possible, and the adults were never seen clearly, and the nestlings were not present at the nest on a later visit. On 26 Jul, a red-tailed hawk nest in HU 1B1 was checked while working on other projects. It appeared that the nest had been used again this year. A pair of hawks used this nest in 2005, and the nest appeared to have been used in 2007 (some whitewash on the ground under the tree). No young were observed. This nest was observed on 26 Jul, so it is possible that the nest could have fledged at the time of observation.

7. Other Migratory Birds

The Breeding Bird Survey (BBS) route established during the biological inventory done by the National Ecology Research Center in 1991-92 has been repeated annually since 2003. The route was completed on 19 Jun. Fifty-three species were detected, with red-winged blackbirds, yellow-headed blackbirds, marsh wrens, double-crested cormorants and mourning doves comprising the 5 most abundantly detected birds. Several species detected in the 1991-92 surveys were not detected in 2007, although many were observed on the refuge during the summer (e.g. loggerhead shrike, gray catbird, willet, northern harrier, red-tailed hawk, blue-winged teal). Dickcissels have been detected during the last four years on the BBS route, but were not detected in 1991-92 or in 2003. Dickcissels are notorious for movements within the breeding season and making erratic, seminomadic movements into the periphery of their breeding range, which can result in dramatic changes in their abundance from year to year. Number of species detected on the BBS route has been pretty consistent from 2004-2007, with 53-55 species detected each year. This represents a decline from the 1991-1992 surveys which detected 72 and 65 species, respectively. Sixty-two species were detected during the 2003 BBS. The survey was done earlier in the year in 1991-92 (late May, early June) than it has been over the last 5 years, thus some of the difference in the number of species detections may be a function of timing rather than an actual decline in species richness.



A pair of newly-hatched Common Nighthawk chicks was observed on 29 Jun 2007 in habitat unit 2A (MN).

8. Game Mammals

Refuge neighbor Keith Colburn reported seeing a 6 x 6 bull elk on his land just south of Valentine Refuge (south of HU 24C). Elk sightings are an uncommon occurrence in this part of the Sandhills, so this was a notable sighting. Elk are becoming more common in Nebraska, so it is possible that elk could show up on the refuge at some point.

a. Deer

There are two State deer management units on Valentine NWR - Highway 83 divides the refuge into the Calamus West and Sandhills units. Harvest regulations are set by the Nebraska Game and Parks Commission, and regulations for the Sandhills unit are set to provide a higher percentage of quality bucks. Hunters reported harvesting 15 mule deer and 57 white-tailed deer for a total of 72 deer during the 2007 season (Table F 8.1). There were 47 male white-tailed deer harvested, of which 2 were fawns, 14 were 1.5 years, 20 were 2.5 years, and 11

were 3.5+ years. Fourteen male mule deer were taken, with no fawns, 2 yearlings, 7 two year olds, and 5 bucks 3.5+ years old. Hunter pressure appears to be lower in the Calamus West unit, as only 9 deer were taken on the east side of the refuge. In contrast, 57 deer were reported as taken from the Sandhills unit. The age structure of harvested deer seems to reflect the anecdotal observations made by Refuge law enforcement personnel, which indicated that several nice bucks were taken.

Table F 8.1. Deer harvest on Valentine NWR during the 2007 deer season. Harvest information based on deer reported to the state check stations.				
	White-tailed Deer		Mule Deer	
Unit	Buck	Doe	Buck	Doe
Calamus W	6	2	1	0
Sandhills	37	7	12	1
State buck	3	n.a.	0	n.a.
Muzzleloader	0	0	1	0
Statewide youth	1	1	0	0
Archery	0	0	0	0

b. Muskrat and other furbearers

No trapping of furbearers has occurred on Valentine NWR for many years. There are several beaver on the refuge (Gordon Creek diversion, Calf Camp Valley, Center Lake, East Sweetwater Lake, Whitewater Lake, West Long Lake, Dewey Lake), and they provide nice wildlife ponds in the spring and summer, but sometimes threaten to flood roads. Muskrat numbers seem to be low at the present time, although the winter muskrat house count has not been completed since 1999.

10. Other Resident Wildlife

a. Prairie Grouse

Greater Prairie Chickens (GPCH) and Sharp-tailed Grouse (STGR) occur in nearly equal numbers across Nebraska, with the prairie chicken being more abundant in the central and eastern grasslands. Sharp-tailed grouse are more abundant in the western part of the state, and throughout the Sandhills. Lek counts are conducted on Valentine NWR during the month of April. Only the State Study Block (approximately half of Valentine NWR) was covered in 2007. Counts included 131 male GPCH on 14 lek sites, and 147 male STGR on 16 leks. Two of the GPCH leks and three of the STGR leks included are on private lands immediately adjacent the refuge, and have been included in the refuge counts in years past. Lek counts for GPCH have been stable over the last three years, with numbers of males observed changing by only seven males. STGR lek counts have also been stable over the last 4 years, and have increased

by a few birds each year during this period. Compared to the 5 year average, GPCH have changed very little (average 137 males), while STGR are higher (average 129 males).

Data from spring lek counts in the State Study Block on Valentine NWR were sent to Bill Vodehnal (NGPC). The State Study Block has been surveyed for leks since 1969, and these data help the NGPC determine hunting season length and bag limits for prairie grouse. These data also allow the refuge to look at trends in the number of displaying male grouse through time. For Greater Prairie Chickens, the 131 displaying males observed in 2007 was lower than averages over the last 5, 10, 15, and 20 years, but was within the 95% confidence interval of the mean over the past 5, 10, and 15 year periods, and was just lower than the lower confidence limit for 20 years by a single bird. The long term trend (1969-present) for male Prairie Chickens is positive and increasing; this is due in large part to a sharp increase in Prairie Chicken males from 1986-1992. Since 1992, the number of male Prairie Chickens has oscillated between approximately 100 and 200 males each year. The trend in male Prairie Chicken numbers over the last 20 years shows a slightly declining pattern, and oscillations in numbers have been less dramatic (Fig G10a.1).

Sharp-tailed Grouse numbers observed in 2007 are above the mean numbers observed during the last 5, 10, 15, and 20 year intervals. Additionally, the 147 males observed in 2007 were above the upper 95% confidence level of the mean for the 10, 15, and 20 year time periods. Linear trend data for Sharp-tailed Grouse on the refuge indicate a declining from the 1969-present data, while a trendline placed over the last 20 years is almost flat. Counts of Sharp-tail males declined about at the time when Prairie Chickens increased dramatically. The cause of the increase in Prairie Chickens and the decline in Sharp-tails is unknown.

The Valentine NWR CCP prairie grouse objective is to maintain a five-year average lek density of greater than or equal to one prairie grouse lek per 1.6 square miles (28 or more leks, including 15 Prairie Chicken and 13 Sharp-tail leks) within the State Survey Block. Averages from 2003-2007 in the State Survey Block indicate that refuge objectives are nearly met, with an average of 15 Prairie Chicken and 12 Sharp-tail leks, or one lek per 1.62 sq. mi. In 2007, the State Survey Block held 14 Prairie Chicken and 18 Sharp-tail leks, or one lek per 1.4 sq. mi.

State study block greater prairie chicken and sharp-tailed grouse lek count history, 1969-2007.

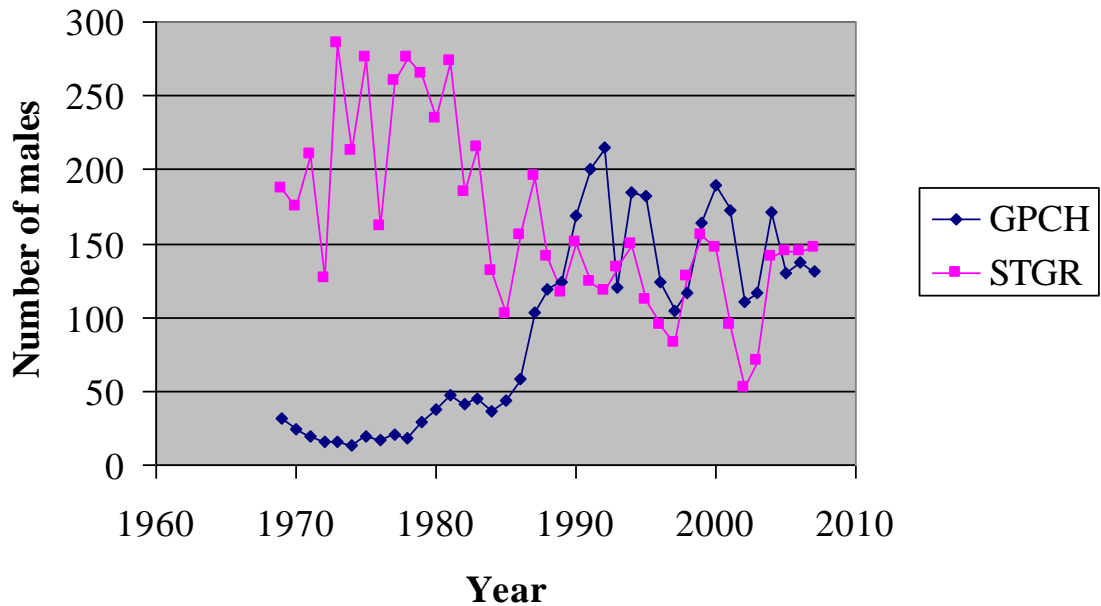


Figure G10a.1. Number of male prairie grouse observed on leks within the State Study Block on Valentine NWR.

Grouse hunting opened on 15 Sept. Hunting pressure was light in September, with reported harvest of 42 prairie grouse (19% of the 2007 total). Most of the harvest occurred in October, when hunters took 54% of the refuge harvest. November and December saw 22% and 5% of the harvest, respectively.

During the hunting season, hunters are asked to voluntarily place one wing from each prairie grouse they harvest into one of five collection boxes on Valentine NWR. This collection affords a way to assess hunting pressure, harvest, and productivity of prairie grouse. Similar collection boxes are placed at Crescent Lake NWR, S. R. McKelvie, and Halsey National Forests. During the 2007 hunting season, 178 hunters on Valentine NWR submitted 224 wings. One hundred eighty nine of these were sharp-tailed grouse, 22 were prairie chickens, and 13 wings were from unknown grouse (species was unknown or hunter reported harvesting a bird but submitted no wing). The Juvenile:Adult harvest ratio for sharp-tailed grouse was 1.82, and for prairie chickens was 2.00. Based on harvest data and backdating wings to hatch, the majority (58%) of prairie grouse hatched during the second and third weeks of June. One greater prairie chicken brood was observed on 27 Jun, with the young birds appearing to be

about 7-10 days old. Valentine CCP objectives call for a harvest of 350 prairie grouse, with a Juvenile:Adult ratio greater than 2.5. The total harvest for 2007 was 126 short of the CCP goal, but declining hunter numbers may make achieving this many grouse wings difficult even in years when grouse numbers are high. This year, each hunter would have had to harvest 1.97 birds/hunter-day to achieve 350 wings. The highest number of birds/hunter-day in refuge records (1979-present) was 1.71. Based on juvenile:adult harvest ratios, 2007 was a better production year than 2006, although still short of the 2.5 juv:adult ratio goal in the CCP. In her 2002 thesis, Flanders-Wanner found that five weather variables seem to impact juvenile:adult ratios in Sharp-tailed grouse. Three of these variables were positively correlated with grouse production (cumulative precipitation as of 31 Jul, May average temperature, June average temperature), while two variables were negatively correlated (number of June days with air temperatures >95° F, June total precipitation). In 2007, weather conditions were generally favorable for grouse production. Cumulative precipitation at the end of July was 1.2" below average, and the average low temperatures for May and June were 50° F and 58° F, respectively. Low temperatures for May and June were 41° F and 39° F. There were no days in June that exceeded 95° F, and June total precipitation was 0.7" below average. On 13 June, there was 2" of precipitation, which could have had a negative impact on broods hatching at or near that date.

b. Ring-necked Pheasant

No systematic surveys were conducted for pheasants during 2007. Observations by refuge staff and conversations with hunters indicate that pheasant numbers are good. Mild winter conditions and lack of hard winter storms has probably helped pheasant populations over the last four years. Throughout the month of January there was a group of 20-30 pheasants hanging around the Hackberry Headquarters. In April, good numbers of both roosters and hens were observed along refuge trails, and crowing roosters were heard across most of the refuge. Broods of pheasants were first observed on 5 June, when a brood of eight, 2-3 day old chicks was seen. Several other broods were seen through June, and it appeared that most broods hatched in the first and second week of June. Based on observations of pheasant broods through the month of July, it appeared that the hatch of pheasants was good in 2007.

c. Merriam's Turkey

Turkeys typically occupy the area around Hackberry Headquarters, Pelican Lake subheadquarters, and Pony Lake subheadquarters year-round. Tom turkeys can be seen displaying in April at the above locations. A large group (25-30, probably multiple broods) of poults was observed near Duck Lake on 10 July, with three adult hens.

d. Gray partridge and Bobwhite Quail

Bobwhite quail are very uncommon on Valentine NWR, and not often observed. Three coveys of quail were observed on the refuge in 2007. In Sept, a large covey of Bobwhite quail was observed off the southeast corner of Rice Lake. The covey appeared to have 20-25 individuals, and is one of the larger coveys spotted on the refuge in recent years. A second covey was reported near the old vineyard in Calf Camp Marsh by Len McDaniel. The third covey was observed at Hackberry Headquarters on 6 Dec. This small covey of 7 birds was seen on several occasions in Dec.

Kime reported a covey of gray partridge on 14 Nov at the west parking area on the north side of Hackberry Lake. Approximately a dozen birds were in this covey. Huns are only rarely seen on the refuge, and this is the first sighting in over 5 years.

e. Reptiles, amphibians, and others

General observations of herps in 2007 didn't show anything unusual for 2007. Garter snakes were first observed making their way of hibernacula in March with the arrival of the first warm days (approximately 10-11 Mar). In April, most of the other herps in the sandhills began showing up, with observations of yellow mud and ornate box turtles, chorus and leopard frogs, bullsnakes, yellow bellied racers, and prairie lizards during the month. The latest observation of a snake was on 20 Nov 2007, when Lindvall observed a yellow bellied racer in the hills north of Hackberry HQ. The snake was not moving very fast, with temperatures in the mid-30° F.

Matt Schwarz (USFWS ES office, Grand Island, NE) collected some leopard frogs on 9-10 Jul. Matt is working on a study of chemical effects on frogs in the Rainwater basin, and was collecting frogs at Valentine as a control (uncontaminated) site. Fifty leopard frogs, all recent metamorphs, were collected at ponds along the Gorden Creek diversion ditch. Four of the frogs were found to have foot abnormalities; the cause of these abnormalities is not known. Matt would like to sample the site again next year and send the frogs to be checked for parasites, as parasites may cause the abnormalities observed. One bullfrog tadpole with a large cyst on the left side of its head was captured and taken back to Grand Island. The tadpole was isolated in a bucket for several days, and when checked a crayfish had appeared in the bucket and the cyst was deflated. Apparently, the crayfish had somehow gotten under the skin of the tadpole and formed a large cyst. It is not know if this was an accidental occurrence, or if the crayfish was actually a parasite on the tadpole.

11. Fisheries Resources

The annual fisheries coordination meeting with Nebraska Game and Parks was held at the Valentine Fish Hatchery on February 15. Graduate Student Jeff Jolley and Dr. Dave Willis from South Dakota State University gave an update on research conducted on Valentine NWR. Points of interest were; pike appear to be controlling carp even though carp are only rarely found in the food habits study; invertebrates are much more abundant in carp free lakes managed for sport fisheries than in carp dominated lakes; bluegill spawning does not appear to be a limiting factor for this species in Sandhills lakes; and pike removal can increase perch size and abundance. Plans for 2007 include renovation of Pony Lake on Valentine NWR and surveys of Cow and West Twin Lakes to see if carp are present. Greg Wanner, Great Plains Fish and Wildlife Management Assistance Office, gave an update on the surveys conducted in 2006 and went over plans for 2007. It was decided to discontinue black crappie stocking in Clear Lake as there appears to be no recruitment from past efforts. It was also decided to move pike from West Long Lake to Clear Lake to increase this species in Clear where carp control is needed. Cooperative access improvement projects were discussed but Nebraska Game and Parks has no funds available to match any we may come up with. They may have funds in the future to help with water control structures. Refuge Manager Lindvall went over the new fishing chapter of the Fish and Wildlife Service Manual with the group.

Valentine Fish hatchery biologists trapped pike for egg collection in Dewey Lake during March. They also collected perch and bluegill at West Long Lake for the same purpose.

Hackberry Lake may have had a partial fish winter kill. The airboat was driven around Hackberry Lake on 13 March 2007 and we looked for dead fish. We saw 15 dead bass around 12 inches long and 2 dead bluegill around 6 inches. The ice had just gone off the lake. There were quite a few gulls that were scavenging the dead fish. Some of the dead fish might have also sunk. We saw no dead perch. I don't think it was a complete kill. The deepest water we found was 36 inches. Water clarity was good. There was little or no submergent vegetation in the lake.

Fish and Wildlife Assistance Office biologists were at Valentine NWR from May 21 -24 surveying the fishing lakes. As a result of the survey, additional bass and bluegill were requested from Nebraska Game and Parks to stock Hackberry Lake. This lake suffered from a partial winter kill. The Valentine Fish Hatchery stocked Hackberry Lake on March 23 with the following bluegill; 56.8 lbs @ 2141 f/lb = 121635 fish and 20.8 lbs @ 246 f/lb = 5114 fish. The Valentine Fish Hatchery stocked 52,445 bluegill (61.7 lbs. at 850fish/lbs.) in Hackberry Lake on Valentine NWR. This is part of the ongoing stocking to restore this public fishing lake.

Valentine Fish hatchery biologists set ten nets on Dewey Lake on March 19 and pulled the nets the next day. They caught 51 female (11 spent, 9 green, 31 eggs

collected) and 48 male (46 used to fertilize eggs) northern pike and got 14 quarts of eggs. For some unknown reason most of the eggs did not hatch. All pike were returned to Dewey Lake. They also set 10 nets on West Long Lake on March 19 and ran them through March 23. They moved 48 pike to Clear Lake and sent 9 to the Schramm Aquarium. Pike were removed from West Long in an attempt to improve perch and bluegill fishing.

Biologists from the Great Plains Fish and Wildlife Management Assistance Office conducted the annual fisheries survey on the refuge and provided us with a report, *2007 Fishery Assessment Surveys Conducted on the Valentine National Wildlife Refuge*, on the results. This report is summarized here.

Clear Lake

Surveys were done for carp, perch, and northern pike only. Low water at the boat ramp prevented the crew from launching the electro-shocking boat to survey bluegill, crappie, or bass. Carp catch per unit effort decreased somewhat from 2006 but is still above the long term average. There has been some recruitment into the adult population of carp from earlier year's hatches. Northern pike numbers are lower than numbers seen up to 2002. It appears that some year classes of carp have escaped predation by pike but that there are still sufficient pike to eat most of the young of the year for the past few years. Most of the pike are now large as there has been little spawning success in recent years. There is no evidence of perch recruitment since 2004. Small numbers of perch have reached the preferred length and should provide good angling.

Dewey Lake

The abundance of carp increased this year. Most of the fish are of larger size. There was no recruitment of 2006 carp into 2007. Northern pike appear to be controlling recruitment. Pike numbers are stable. Bluegill are relatively abundant but most of smaller sizes. Perch numbers increased but are still lower than the highs of the mid-90's. Bass numbers continue to decline and are now made up of mostly smaller fish.

Hackberry Lake

Hackberry Lake was renovated in 2004 by pumping the lake and application of rotenone. The lake has been slow to refill. Stocking of perch, bluegill, and bass has been done courtesy of Nebraska Game and Parks. There was some winterkill during the winter of 2006-2007. Winterkill reduced the numbers of bass and bluegill seen in this year's surveys to a very low number. Perch appear to have survived better and some are reaching the size preferred by anglers. No carp have been found since the renovation.

Pelican Lake

Fish numbers in Pelican Lake are fairly stable. Pike numbers have been fairly constant since 2004 and are limiting carp recruitment. Preferred length bluegill increased this year. Bass are abundant and many are of large size. Perch numbers have increased from successful spawning in previous years.

Rice Lake

Rice Lake was not surveyed. Rice actually went dry during the summer. There was only wet mud in the lake for a period of about 2 weeks. When it rained a small amount of water returned to the lake.

Duck Lake

Duck has no carp or northern pike present. It is a bass, bluegill, perch fishery. Bluegills have balanced numbers with a mix of all size classes. A strong 2007 year class of bass will recruit to stock length in 2008 and likely affect perch and bluegill numbers. Yellow perch are low in abundance with a few preferred length fish.

Watts

The Watts Lake fishery includes yellow perch, largemouth bass, bluegill, orange spotted sunfish, green sunfish, grass pickerel, northern pike, saugeye, black bullhead, and common carp. In the past muskie were present but have not been stocked for many years and are most likely no longer present. Bluegill numbers increased greatly from the 2005 and 2001 surveys. The size structure is still mostly smaller fish. The first carp was surveyed in 2005 when 1 fish was caught. This year 7 carp were caught per gill net. The fish were all large size. Bass numbers are increasing with multiple year classes present. Some northern pike were also sampled. The only stocking of pike was a male only stocking in 1989. The size variation of the pike indicates that they are now spawning in the lake. One saugeye 25 inches long was surveyed and had to be 11 to 13 years old based on stocking records. Yellow perch numbers and size structure improved from previous surveys with some fish now in the size preferred by anglers.

Pony Lake was renovated to remove carp in the fall of the year. A screen was placed in the water control structure at Pony Lake prevent carp from moving into the lake should water flow through the structure. Pony Lake was renovated using rotenone to kill carp on October 2. Liquid rotenone (490 gallons) and powdered rotenone (495 pounds) both with 5% active ingredient were used to treat 153 surface acres or 552 acre feet of water. The target concentration was 3ppm. Nebraska Game and Parks and South Dakota State University graduate students conducted the treatment along with refuge staff. The following fish species were

observed after the lake was treated (listed by abundance, information from Jeff Jolley, SDSU): fathead minnow, green sunfish, black bullhead, common carp, golden shiner, grass pickerel, pumpkinseed, and yellow perch. Despite being the fourth most abundant fish, common carp dominated the fish biomass in the lake, comprising 76% of the total fish biomass (172 kg/hectare). The treatment is part of a long term study to determine the effects of no fish, carp, and sport fish on invertebrates and water quality. We did not pump the lake prior to treatment. We decided not to treat Center and 21 due to the large amount of water in flooded emergent vegetation.

Refuge Manager Lindvall met with Game and Parks and SDSU staff on July 18 to
Refuge Manager Lindvall looked at carp barriers that have been installed on Goose Lake by the Nebraska Game and Parks Commission. The barriers use a combination of large rock and perforated pipe to stop carp and allow water passage. Some also have bypasses with grates for high water events. One of the concerns with the barriers is that vegetation being carried along by the water will clog the spaces between the rocks and the holes of the perforated pipe.

14. Scientific collections

See section G17 for information on waterfowl collected for Avian Influenza surveillance.

15. Animal control

No activity to report

16. Marking and Banding

No activity to report

17. Disease Prevention and Control

A Disease Contingency Plan was written for the Ft. Niobrara/Valentine NWR Complex. The Plan was completed in Jan 2007. This plan provides a framework that the Complex can use to address handling a wildlife disease event on Refuge lands. The DCP stresses the importance of maintaining biosecurity in the event of a disease outbreak to prevent the spread and potential infection of other wildlife or people, and the use of appropriate Personal Protective Equipment. The plan includes sections conducting an investigation of wildlife mortality, carcass clean-up and disposal, and information on how to submit specimens to a wildlife disease laboratory for diagnostic work. The final plan can be found on the Valentine NWR biologist's computer under c:\My Documents\Mel\Work Files\Wildlife diseases\Disease Contingency Plan final.doc. Much of the information in the Disease Contingency Plan was found in the Field Manual of Wildlife Diseases (Friend, M. and J.C. Franson, technical editors. 1999. Field Manual of Wildlife Diseases: general field procedures and diseases of birds. U.S. Department of the

Interior, U.S. Geological Survey, Washington, DC). This book is shelved in the Managers office at Hackberry Headquarters.

No hunter-killed deer were found to have Chronic Wasting Disease (CWD) in Cherry County during the 2007 hunting season. The Nebraska Game and Parks Commission (NGPC) continued CWD monitoring across the state again in 2007, and had a check station at Valentine NWR to better sample deer harvested on the refuge. Valentine NWR provided the NGPC technician a trailer, generator, table, chairs, and lights for the check station. No CWD positive deer were reported from Valentine NWR, and no CWD were reported in Cherry County.

Four dead white-tailed deer were observed on Valentine NWR during 2007. All of these deer were found either in or near water. Although no testing was done, their location suggests a possibility of EHD. On 20 Aug 2007, a dead deer was observed floating in West Long Lake, southeast of the east Boat Launch/Parking Area. The deer appeared to be a white-tail, and may have died from EHD or blue tongue. Two dead deer were observed in the Marsh Lakes during Avian Influenza surveillance in Oct. One was seen in Middle Marsh on 06 Oct, and a second was spotted in South Marsh on 27 Oct. The last deer was found near the small wetlands on the west end of Watts Lake during the waterfowl hunting season in early Nov. At least two of these deer appeared to be young (1.5 year old) bucks, based on their antler development.

Avian Influenza Surveillance

Nenneman and Lindvall were part of a conference call about avian influenza proposals with many USFWS personnel from Region 6 and Dr. Tom Roffe. Dr. Roffe wants proposals from refuges for conducting avian influenza surveillance activities, especially surveys to detect animal mortality in the early stages of an outbreak. As a result of this discussion, Lindvall submitted a proposal to conduct weekly Avian Influenza Surveillance on Dewey Lake and the Marsh Lakes on Valentine NWR through the bulk of the waterfowl migration (approximately mid-Sept through freeze-up), and then continue surveillance efforts by monitoring Trumpeter Swans wintering at Merritt Reservoir. The proposal also included funds to purchase a new airboat to replace the two aging airboats currently at Valentine NWR. This proposal was funded.

Avian influenza surveillance on the Marsh Lakes and Dewey Lake began on 22 Sept. These surveillance efforts continued on a weekly basis until the lakes froze up in November. During nine weeks of surveillance, three birds were collected and sent to the National Wildlife Health Lab in Madison, WI. A Northern Shoveler and a Gadwall were collected on the Marsh Lakes on the 22 Sept. transect, and a second Gadwall was collected on the Marsh Lakes on 27 Oct. None of these birds were found to have West Nile Virus or Avian Influenza. The cause of illness was not determined for any of these individuals. The Gadwall collected on 27 Oct did have damaged primaries on both wings, which was noted by investigators, but the cause was not determined.

Several other sick birds were observed in Oct., but were not captured (one each of mallard, gadwall, pelican, sandhill crane). The ducks and sandhill crane were healthy enough to avoid capture, and the pelican was not collected as it was not listed as a priority species. Diane (Alonzo) Borggreen did indicate that if other sick pelicans were observed, they should be collected because the effects of AI on pelicans is not well known. No other sick pelicans were found to submit.

No sick or dead birds were observed on Dewey Lake or the Marsh lakes during Avian Influenza surveillance conducted in Nov. Transects were done on 03, 09, and 19 Nov. The lakes pretty well froze up on 22 Nov, bringing AI surveillance to a close on the refuge. The next phase of surveillance will begin next month with monitoring trumpeter swans wintering at Merritt Reservoir.

Avian influenza surveillance on Trumpeter Swans wintering at Merritt Reservoir began on 12 Dec. Only 4 swans were seen on this survey, along with a handful of other waterfowl (Canada geese, mallards, common goldeneyes). Swan numbers increased greatly the following week, with about 92 swans recorded. Swan movements made getting an exact count difficult, but there were obviously many more birds using the area. Along with the swans, there were quite a few Canada geese and common goldeneyes, as well as some mallards and common mergansers. The last survey of the month still had large numbers of swans (103), one of which had a green neckband. Good numbers of mallards were also seen, and a few common goldeneyes. No sick or dead birds were observed during these surveys.

H. PUBLIC USE

1. General

An effort was made to send news release to local news outlets on a regular basis. The following were sent out and appeared at least in the local paper and on the radio station.

Blinds for viewing Grouse Dances Available at Valentine NWR.

Kim Chadwick, New Employee at Valentine Refuge

Valentine NWR Lake Levels

Refuge Manager Lindvall also spoke on lake levels on the KVSH Radio Outdoor Report.

An article "Ghost Roads of Nebraska: appeared in the September 2 travel section of the Washington Post. The article had an interesting section on Valentine NWR.

On November 8, Refuge Manager Lindvall gave a short presentation to the Valentine Rotary Club on what's new on Fort Niobrara and Valentine NWR's.


Minor revisions were made to the Valentine NWR general brochure and a printing completed. A Wildlife List, which replaces the old Bird List, was finalized and an order submitted for printing. The list replaces the bird-only list we had in the past. The new list includes birds, reptiles, amphibians, and mammals.

2. Outdoor Classrooms - Students

Lindvall, Nenneman, Melvin, and Frerichs helped with the Lions Club Kids Fishing Day held at the Valentine Fish Hatchery on May 12. About 140 children received instructions, free spin cast outfits, and a chance to catch trout. The weather and fish cooperated to make a fun day for the students.

Refuge Manager Lindvall taught the muzzle loader section of the Nebraska Game and Parks Hunter Safety Course to 35 students on July 30.

A group of motivated students from the Walnut Middle School in Grand Island, NE undertook a project which they dubbed the Penstemon Protectors. These students, with help from Dr. Jim Stubbendieck from UN-L, started growing about 200 blowout penstemon seedlings in their classroom. Throughout the school year, these students learned about blowout penstemon, the habitat it requires to grow, what it means to be an endangered species and the importance of conservation, and studied how the plant grows from a small seed into a seedling ready to transplant into a blowout. This project allowed students to learn about science, plant biology, website development, creating podcasts, and teaching others about what they learned through a poster contest at the school and development of a brochure (Fig H2a). There was a nice article about their project in the May/June 2008 edition of the Refuge Update (begins on page 14). The highlight of the project for many students was a field trip to Valentine NWR to plant the seedlings that they grew in their classroom into blowouts on the refuge. The students also helped transplant ~2400 seedlings from Dr. Stubbendieck's greenhouse in Lincoln. While on the refuge, the students had the opportunity to camp and fish, as well as learn about the grasslands on Valentine NWR, some of the animals that inhabit the sandhills, and a bit about the management of the refuge. The hands-on, on-the-ground experience appeared to make an impression with the students, as many of their journal entries commented on their experiences with being able to feel a snake or turtle, memories made while camping and fishing, and the chance to do something to help in the conservation of the endangered Jewel of the Sandhills, the blowout penstemon.



HISTORY OF BLOWOUT PENSTEMON

1857: Mr. Hayden collected blowout penstemon for the first time.

1891: H.L. Watson described blowout penstemon.

1913: Mr. Pool would hike through the sandhills on the weekends. He noticed that blowout penstemon was very common.

1940: Pool thought blowout penstemon was extinct, because he didn't see any more plants.

1968: Mr. Sutherland rediscovered blowout penstemon. It was still alive!

1981: UNL (University of Nebraska at Lincoln) started researching it.

1987: Blowout penstemon was put on the Endangered Species List.

1992: The official recovery plan was finished.

ABOUT PENSTEMON PROTECTORS



Thanks to a grant from the U.S. Fish and Wildlife Foundation, a group of thirteen middle schoolers have the opportunity to help save the endangered plant species blowout penstemon. We met twice a week before school to learn about the plant.

Our group was selected based on academics and responsibility. To learn more about the plant, we took a trip to the University of Nebraska at Lincoln, to talk to Dr. Stubbendieck, and expert in blowout penstemon. Approximately 382 plants accompanied us on return to Walnut Middle School. These plants were some of the 2,400 blowout penstemon that we planted in the sandhills.

On May 8-11 we went to the Valentine Wildlife Refuge to plant the blowout penstemon that we brought back from Lincoln, and about 2,100 more penstemon. We had a successful trip!

PENSTEMON PROTECTORS




Walnut Middle School
1600 North Casser
Grand Island, NE 68805
308-385-8998

Beckham-Jennifer and Christina Zerk

INFORMATION ABOUT BLOWOUT PENSTEMON

WHAT IS BLOWOUT PENSTEMON?


Blowout penstemon (*Penstemon Haydenii*) is a species of plant that can only survive in loose sand and blowouts. The only place that blowout penstemon can be found is in the Nebraska sandhills. (blowout in the Nebraska sandhills)



Blowout penstemon is a perennial, a plant that re-grows every year. It stands 10-30 inches tall, and produces many stems that grow around the center of the plant. Its leaves are a light green, arrowhead-shape, and grow to be 2-5 inches long. In late May to mid-June, blowout penstemon blooms. Its blossoms vary from a light lavender to purple to white. These blossoms have a very strong fragrance.

ENDANGERED

There are four main reasons why the blowout penstemon became endangered. The first one is loss of habitat. Blowout penstemon is a first recovery plant, which means it can only survive with little vegetation. In the early 1900's, the sandhills had many active blowouts and sand dunes. Now because of greater efforts to prevent soil erosion they are highly vegetated, and the blowout penstemon can't compete.



The second reason for blowout penstemon's endangerment is the extreme changes in the amount of precipitation. Lately, we have been in a drought. But we also experience heavy rainfall. The plant needs the blowing sand, but it also needs some water.

Not only does the weather, and habitat affect it, but an insect did too. The pyralid moth larvae burrowed inside the stems and ate it. This moth was not native to America. Fortunately for the blowout penstemon, scientists exterminated the moth, so it doesn't bother the blowout penstemon anymore.

The last reason for its declining numbers is because the seeds do not reach other blowouts. Since the blowouts are so far apart now, the seeds rarely get spread. If the seeds do reach another blowout, blowing sand is needed to scratch off the thick outer covering in order for the seeds to grow. All these reasons make it hard for blowout penstemon to survive.

RECOVERY EFFORTS



The recovery plan was approved in 1992. This plan included protecting existing plants, locating all blowout penstemon, learning more about this species, and increasing its population. tJH's second goal was to find a way to increase the blowout penstemon's numbers.

They first tried to do this by planting seeds, but that failed. The solution to this problem was to transplant seedlings that had been grown in a greenhouse. Growing the seedlings proved to be harder than anticipated. They had to discover how to get the seeds to germinate. Once they mastered how to grow the seedlings, it was a simple task to replant them in the sandhills. In 2006, they counted 20,567 blowout penstemon living in blowouts. Blowout penstemon is on its way to recovering!

For more information regarding this project please contact:

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Fig H2a. Brochure developed by a group of students at Walnut Middle Students for their "Penstemon Protectors" project.

4. Interpretive Foot Trails

The Civilian Conservation Corps Nature Trail goes from a parking area on the west end of Hackberry Lake to the old fire tower constructed by the CCC. An observation deck is located inside the legs of the tower and interpretive panels teach about the geology, habitats, and wildlife of the Sandhills.

Information on and photos of the Civilian Conservation Corps Nature Trail was provided to a local group that has built a web site with information on hiking and biking trails in the Valentine area.

SCEP Kim Chadwick put up 15 interpretive signs on the CCC Tower Trail. The generic signs have information on both plants and animals that might be seen along the trail.

In May staff from Federal Highways visited and mapped the trail for inclusion in the national trail system.

7. Other Interpretive Programs

SCEP Kim Chadwick constructed a “Birds of Valentine NWR” display that gives visitors a place to record the date, bird, and location of birds they have spotted on the refuge. It provides information to other birders on what to look for and where to look.

8. Hunting

Waterfowl hunting is permitted on Watts, Rice, and Duck Lakes. Seasons and bag limits are the same as those set by the state. The 2007 season was October 6 - December 16 and December 22 – January 14. Duck hunting pressure was light for the opener but we had some out of state groups hunt the refuge regularly during the season.

Grouse season opened on September 15 and ran through December 31 with a limit of three. Eleven groups of hunters were recorded at Valentine NWR for the grouse hunting opener. Hunters harvested about one bird each. Hunting pressure was low for the rest of the month.

Most of the refuge is open to grouse hunting except the natural areas and around building sites. We have noticed a decline in the number of hunters for grouse. Nebraska Game and Parks estimated that grouse hunter numbers declined from 20,000 in 1987 to 6,200 in 2002. The hunters that were out had fair success. Hunter harvest is reported through voluntary wing collection boxes placed at five

locations on the refuge. In 2007 we had 178 hunter days. Reported harvest was 224 prairie grouse including 22 chickens, 189 sharptails, and 13 unknown. More complete information on grouse harvest can be found in section G10a. Nenneman and Melvin rehabbed the grouse wing collection boxes and built new mounting brackets so that the boxes can be more easily put out by one person (Fig H8a).



Figure H8a. Rehabbed grouse wing collection box and new mounting bracket (MN)

Numbers of pheasants as well as pheasant hunters were up this year. Some hunters took limits opening weekend. An estimated 50 hunters were out opening weekend which started on October 27. The season ran through January 31, 2008 with a limit of three roosters. No counts were made of the number of hunters and we do not use the wing boxes for monitoring as we do with grouse. An estimate of 200 visits by pheasant hunters is made. Some people combine a pheasant hunt with a grouse, duck, or deer hunt.

Rifle deer season ran from November 10 through 18. For the third year, Valentine NWR paid Game and Parks to run a check station on the Refuge at the intersection of Highway 83 and Little Hay Road. The station was open from 8:00 AM to 8:00 PM on the opening weekend of the season. The check station was run to get a larger sample for testing refuge deer for chronic wasting disease.

Some Refuge deer were also checked in town and had samples for disease testing taken.

Most of the deer hunting takes place on the opening weekend of the season. Some hunters reported seeing lots of deer and others few. We had quite a few hunters, many from out of state. There was again confusion with season choice area 22 permits (2 does for the price of one). The fact that these permits are not good on Valentine NWR was not obvious to the hunters until after they had purchased the permits and then only if they printed out the regulation sheet that comes with the permit. Hopefully, we can get this cleared up next year. We again also seemed to have more people that have 2 rifle deer permits valid on the refuge. This is in part due to the fact that statewide buck permits are now unlimited in number. We need to look at how many hunters shot 2 deer on the refuge during the rifle deer season. If this number is high we may want to try and have the refuge put into its own unit. Hunting pressure on public land is increasing as access to private lands decreases.

A total of 71 deer was recorded as harvested during the rifle season on Valentine NWR. This includes deer taken under Sandhill and Calamus West general permits, state wide buck permits, and statewide youth permits. This is up from last year and included a more older bucks in the 3.5 plus year classes. Most of the deer were taken on the Sandhills side of the refuge. More complete information on deer harvest can be found in section G8. Numbers come from records obtained at Nebraska Game and Parks check stations and the refuge check station.

All of the refuge west of Highway 83 is in the Sandhills Deer Hunting Management Unit and all east of the highway is in the Calamus West Unit. In 1995 Nebraska Game and Parks removed Valentine NWR from the area where doe only Sandhills permits were valid. Starting in 1997, a statewide bucks only permit was also available. Starting in 2006 there were also youth statewide permits available. The refuge probably receives about the heaviest hunting pressure of any location within the units but a quality hunt is possible especially if opening day is avoided. Nebraska is trying to reduce the deer herd in the state to control depredation problems. They have done this by increasing numbers and types of permits available. Access on private land has however become more difficult over the years resulting in more hunting on public lands such as Valentine NWR.

The refuge is also open for muzzle loader deer hunting. The season runs from December 1-31. Hunting pressure for this deer season was light. One buck mule deer was reported as harvest by muzzle loader hunters

The refuge is also open to archery deer hunting which runs from mid-September through the end of December. Archery deer hunting is not permitted during rifle deer season. Only a few hunters were known to have visited the refuge for

archery hunting. No deer were checked in and recorded as taken during archery season on the refuge.

Coyotes can be hunted on the refuge from December 1 through March 15. A free permit is required. The permit is a postcard that the hunter returns at the end of the season. There is no charge for the permit. Running coyotes with dogs is not permitted. For the 2006-2007 season, 60 permits were issued and 26 returned (43 percent return rate). 8 successful and reporting hunters took 13 coyotes. Many of the coyotes on the refuge and in the surrounding area have mange. Some have only hair left on their heads. The number of successful hunters has remained fairly constant over the past 5 years, but the number of permits issued and the number of coyotes taken has been declining.

The refuge is also open for dove hunting but few hunters come here specifically to hunt doves. A few are shot by grouse and pheasant hunters.

9. Fishing

Nine refuge lakes (Watts, Rice, Duck, West Long, Pelican, Hackberry, Dewey, Clear, and Willow) are open to fishing year round. Fishing, especially ice fishing, accounts for most visits to Valentine NWR. Willow Lake had a complete winter kill in the winter of 2002 – 2003 and there was a partial summer kill on Rice Lake in 2003. These lakes were open to fishing but received no fishing visits. Rice Lake went dry during the summer of 2007. Hackberry Lake received very few visits year as it was renovated in 2004 and the fish are still too small for harvest. Most of the visitation for the refuge is for fishing. Not enough counts were made to provide a good estimate for fishing visits.

There was sufficient ice for ice fishing from December 1, 2006 through March 7, 2007. Most winter fishing visits were for pike as the fishing for bluegill and perch was poor.

There quite a few fishermen during May, mostly fishing for pike. They had pretty good success, especially earlier in the month. About 150 anglers were out each weekend day. They had good luck catching pike at Clear and bass on Duck Lake.

Refuge size limits remained the same with a 15-inch minimum on bass and northern pike with a 28-inch maximum size limit (pike greater than 28-inches must be released). The state has a 15-inch minimum on bass for most public waters including the refuge. Minnows are prohibited on refuge lakes to prevent introduction of exotic fish. Gas powered boats are not allowed.



Figure H9a. A nice catch of perch and bluegills can be had through the ice.

11. Wildlife Observation

Blinds were placed for observation of both sharp-tailed grouse and prairie chickens. The blinds were put on leks in Habitat Units 30A2 and 16B2. People come from all over the country and even a few from foreign countries to watch the grouse display. We have a reservation system for the blinds. The two blinds were booked for 30 days.

People come to the refuge to bird watch and enjoy the prairie. No counts are made for this type of visit which seems to be on the increase.

12. Trapping

The refuge has a trapping plan and is open to trapping. No recreational trapping took place on the refuge in 2006.

17. Law Enforcement

Law enforcement activities on the Valentine National Wildlife refuge during 2007 centered around monitoring public use, primarily hunting and fishing activities. Full time Refuge Officer Chuck Melvin transferred from the Fort

Niobrara/Valentine National Wildlife Refuge Complex to Detroit Lakes Waterfowl Management District in May of 2007. Replacing Officer Melvin, James Neely transferred from the Kenai National Wildlife Refuge arriving on station in late September. Refuge Manager Lindvall and Maintenance Worker Kime have LE authority as collateral duty officers.

Refuge Officers Lindvall and Kime attended the annual law enforcement refresher held in Marrana, AZ from January 30 through February 2.

Refuge Officers Lindvall and Kime attended the fall LE Re-qualification and Refresher held at Fort Niobrara NWR on September 5 and 6.

Refuge Officers Lindvall and Kime renewed state LE credentials.

Student Career Experience Program student Kim Chadwick went on LE training details to Wichita Mountains, South Texas Refuge Complex, and Kenai NWR during the summer. She had a chance to see what different kinds of work refuge officers do. She is interested in becoming a refuge officer upon completing college.

In the first part of January, barbed wire was noted missing from the store yard at Pony Lake on Valentine NWR. A surveillance camera was set up and photos of the truck used in the theft were taken on 2 occasions. The photos were taken to the State Crime Lab in Rapid City and a good description and partial license number read. On January 22 the truck was found by Refuge Office Lindvall on Main Street in Valentine with 3 rolls of stolen electric fence wire in the truck bed. Special Agent Damico and Refuge Officer Portwood were in Valentine to investigate the case. We questioned the driver of the truck, Tony Ganser, who confessed and told us who he had sold the wire to. A total of 123 rolls of barbed wire and the 3 rolls of electric fence wire were recovered from the ranchers who he had sold the wire to. A minimum of 27 rolls of barbed wire were not recovered. The value of the recovered wire is about \$6,000 and the missing wire \$ 1,300.

Tony Ganser pled guilty in state District Court to the theft on April 6. On June 1 he was sentenced for a Class IV felony, given 30 days jail (- time served), 2 years probation, \$500 fine, \$1,218 Restitution (replace wire not recovered), \$121 cost of prosecution, \$30 court fee, and \$25/month for cost of probation officer. He started payment for the wire that was stolen and not recovered. He will pay \$75/month via his parole office until the total is repaid.

A fake security camera and sign announcing video surveillance was placed at the Pony Lake sub-headquarters at Valentine NWR. Lockable gates were also placed on the road leading into the Pony lake Sub-headquarters. The refuge housing located here was vacant for the entire year.

A letter outlining the need for a special use permit was delivered to an individual suspected of guiding for fishing on Valentine NWR.

Extra LE hours were put in for the rifle deer season. Overtime funds from the zone pool were used instead of comp time to conduct the patrols. The use of these funds really helps as most employees already have lots of leave and comp time built up during the year. This is one of the busier times for hunting on Valentine NWR. We made lots of contacts and answered lots of questions on refuge and Nebraska deer regulations. Warnings or tickets were given for operating an atv on a refuge road, no hunter orange, untagged deer, duplicate license, unsigned license, hunting in the wrong unit, and outfitting (charging to haul out deer with horses).

On Sunday November 11, Veterans Day, a hunter walked in to Refuge Officers Kime's house at about 6:30 PM. He had been lost and walked about 12 miles before reaching Dave's house. He told Dave that he and his companion had separated and planned to meet back at their trucks. Dave took the hunter to his truck which was 5 miles from Dave's house. Dave received a call from the sheriff's office. They had received two 911 calls about a hunter walking along Highway 83 within the refuge. Dave went over to the highway and located the second hunter who was being assisted by some other hunters who happened to be traveling down the highway. The second hunter was dehydrated and weak. Dave took him back to his vehicle about 5 miles away. Dave then took them both to his house and fed them before they drove to town. All turned out well but it surely would have been a different story if the weather had been bad.

Public use attitudes and actions demonstrate a high level of compliance to refuge regulations and State of Nebraska laws governing hunting and fishing. No complaints concerning law enforcement personnel were received by refuge management or Regional Office staff.

A brief summary of Notice of Violations issued in 2007 follows:

Violation	# of cases	fines
Possession of Alcohol	3	\$525
Possession of fish over size limit	2	\$350
Operation of ATV	1	\$350
No fishing license	1	\$175
No hunter orange on head	2	\$250
Failure to properly tag deer	1	\$125
Conducting private enterprise without permit	1	\$175

18. Cooperating Associations

The Complex has a friends group, the Sandhills Prairie Refuge Association, which does projects on Valentine NWR. The group sponsors the book and souvenir sales at the Fort Niobrara Visitor Center and has a quarterly newsletter. Refuge Manager Lindvall attended the quarterly board meetings.

The Association held the annual members meeting on November 13. A guest speaker from the National Park Service gave a talk of water use and issues for the Niobrara River.

Long time refuge friend Doug Ballard passed away. Doug served for years as both president and as a board member of the Sandhills Prairie Refuge Association. He was a dedicated friend and fine nature photographer. He was raised on a ranch adjacent to the refuge and took many excellent photos here. We will miss him greatly.

I. EQUIPMENT AND FACILITIES

1. New Construction

Valentine NWR received visitor service funds from the Washington Office to construct a visitor contact station along US Highway 83. Melvie Uhland from Visitor Services and Mike Crocker from Engineering were out to look at the site and review plans for the station. Mark Kovars from Nebraska Department of Roads also met with us to discuss access off of the highway. It was very productive to take the plans and adapt and fit them to the site. We also were able to decide on materials and specifications for the structure, roadway, interpretive panels, and nature trail. Based on traffic volume, Mr. Kovars did not believe acceleration and deceleration lanes were needed. He also said he would help with the permitting process and paving of the approach within the right-of-way. Plans for the viewing station were completed during the year. A statement of work was also prepared for the interpretive panels. A permit to improve the turn out for the facility was received from the Nebraska Department of Roads.

The 8A contractor selected to construct the viewing station submitted proposals that were way in excess of the funding available. The original proposal from the contractor was for \$345,000. He reduced this to \$211,000 upon negotiation. This still seems excessive for what is basically a cement pad with two display walls and a roof and a gravel road and parking lot. We decided to go to local contractors for bids to see if we can get the project done at a reasonable cost. The project was not built in 2007 but will be in 2008.

A cement base for a kiosk and temporary signs were placed at the west entrance to Valentine NWR on the county road. An approach was built and graveled.

When the visitor information stop is completed next summer, the small kiosk at that location will be moved to the west entrance.

Four and one half miles of boundary fence was replaced using the refuge portion of grazing receipts. The work was done by contractors.

2. Rehabilitation

SCEP Kim Chadwick replace about 50 boundary and 10 no hunting zone and area closed signs.

Repairs were made to the Hackberry Dike at Valentine NWR. Silt that was pumped out of the lake during renovation was used to fill low spots in the dike. About 100 yards of dike was rehabbed. The silt had also filled in a part of the wetland below the dike. The removal restored the wetland to its previous condition.

A request for a Nationwide 404 permit under the maintenance section was received for repair of the Watts Lake Dike. A DEQ water quality exemption was also received. Trees growing on the dike were cut, stacked, and burned. Extensive repairs were made to the dike. Fill was placed in low spots on both sides of the water control structure. Hay was placed on top of the fill to prevent erosion. Silt below the structure was dug out and used for fill. Rip rap was placed below and to the sides of the outlet. Water was not flowing out of the lake during construction. This made the job much easier.

A roto-tiller with a drag was used to smooth out the Pelican Lake, West Long, and School Lake Cut Across Trails.

Trees were also cut off Dewey Dike and along roadsides on the Clear and Duck Lake Roads. The tree shears that we borrowed from Quivera NWR was used to do the work.

3. Major Maintenance

A truck ran off Highway 83 on Valentine NWR during a snow storm. The truck destroyed a portion of the turtle fence on the east side of the highway at East Sweetwater Lake. We requested that Nebraska Department of Roads repair the fence but it was not done by years end.

The road shoulders of all the public use trails at Valentine NWR were mowed with the new mower we received in trade for the defective unit they originally provided. We had some problems with the replacement but at least were able to get the job finished with only one breakdown.

All the refuge directional and regulation signs were checked and replacements put up prior to the opening of the grouse season.

Nelson Plumbing and Heating installed a new furnace and added air conditioning in Quarters 2 at Valentine NWR. Rent receipts and left over quarters funds from the Regional Office were used to fund the project. The old furnace was unreliable and made the house smell like diesel.

Overhead Door from North Platte repaired the garage doors at the Quonset and the Hackberry Machine Shed.

Trees cut off Dewey Lake Dike in the spring and stacked and burned in the winter. The removal of the trees will make mowing and maintaining the dike easier. In the future trees will be mowed or sprayed to keep them off the dike.

Repairs were made to the School Lake Cut Across Road at Valentine NWR. Dirt stockpiled years ago was placed in low spots on the road that were prone to flooding. The road is now in much better condition.

The Hackberry Boat Ramp on the east end of the lake was dug out so fishermen can access the lake. The lake was renovated in 2004 and some of the fish stocked should be reaching catchable size.

A contractor replaced the asphalt shingles on the Trappers Shack and the pump house. Some of the fascia boards were also replaced on both buildings.

All Valentine NWR trails, parking lots, and road ditches were mowed in preparation for the hunting seasons.

All the windmills at Valentine NWR were serviced in the fall.

The sewer lift station at Quarters 13 was repaired. The wires and many rusted parts were replaced and the automatic switch fixed.

Maintenance Worker Kime repaired the fiberglass hull on the Airgator airboat. He also replaced rusted bolts on the engine support.

4. Equipment Utilization and Replacement

We received a surplus Argo 6 wheel drive all terrain vehicle from the Rocky Mountain Arsenal NWR. We have used it to make fire breaks, apply rotenone, and to do avian influenza surveys. It is equipped with tracks and can go about anywhere.



Figure I4. An Argo ATV was obtained as a surplus vehicle from Rocky Mountain Arsenal NWR

6. Computer Systems

A new GIS computer was purchased for Valentine NWR with funds obtained through the HAPET office in Grand Island. The decision to replace the old GIS computer was made after the hard drive crashed and had to be re-imaged before the machine would function. The motherboard on the computer had also been replaced 3 times. We also got a printer that can produce large maps.

7. Energy Conservation

The house trailer, Pony Office, Trappers Shack, and public restrooms were all winterized. To save energy, we do not heat these buildings.

J. OTHER ITEMS

3. Items of Interest

The 480 acre Yellowthroat WMA in Brown County is managed from Valentine NWR. The area has an excellent mix of grassland and wetland. There is a water control structure located between the marsh and lake on the area. The land was acquired in fee title from the Farmers Home Administration. Much of the sandy soil on the area was farmed under center pivot irrigation prior to acquisition. The area is open to public use including hunting and fishing.

We are worked with RO Water Resources to get 2 irrigation wells located at Yellowthroat WMA transferred from the previous landowner to the USFWS. A third well shows as being on FWS land on the deed but is possibly located on the neighbors land.

Refuge staff sprayed leafy spurge with Plateau at all known locations. A contractor sprayed Canada thistle with Milestone. We are getting ahead on the spurge but the thistle continues to be a problem.

Portions of the area were reseeded to native grass in the spring of 2006. We had adequate rainfall this year and the seeded areas are much improved.

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4. Credits

Refuge Manager Lindvall wrote sections A; D-1 and 4; E-1,4,5,6,8; F-7,9,10,12,13; G-11, H- all; I- all; J-3: Biologist Nenneman wrote sections B; D-5; F-1,2,5, 7 (monitoring); G-1,2,3,4,5,6,7,8,10,17. Photo credits; Mark Lindvall - MLL; Mel Nenneman – MN; Kim Chadwick – KC; Dave Kime – DK;